COMPUTERWORLD

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Marine programmer grabs his cartridge belt and M 16 to go out on patrol near the DP center. Land mines, booby-traps, and 2311 disk units are all part of the daily "routine."

Official Cites Fraud

Mass. Computer Schools Warned

By Edward J. Bride
and
Harvey Elman
CW Staff Writers

BOSTON – The director of the Massachusetts Consumer Protection Division says he will "close every computer school in the state, if necessary" to stop misrepresentation and fraud.

Arnold Epstein, who is responsible to the state attorney general, said that regulation is needed to protect unaware computer school enrollees, and potential enrollees, from fraud.

Epstein said last week that false claims were creating a "field day" for some computer schools.

Schools in Boston and New York have closed recently, without warning or consideration for the students.

In New York, Attorney General Louis Lefkowitz expressed concern over the failings of these schools "because the people taken advantage of are those who can least afford it."

He added that "students attending such a school are trying to better themselves, often working during the day at low paying jobs, and studying at night."

In New York, state approval is not required for computer schools, but those schools not approved must put up a surety bond to protect students in event of business failure.

In Massachusetts, there is no current law on financial responsibility or regulation of the educational facet of these schools.

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Computers at War

I Corps Marines in Viet 'at Home' On Patrol and in DP Installations

By Bernice Pantell
Special to Computerworld

SAIGON, Ground combat, air combat, guerrilla warfare, you name it and the U.S. Marines are doing it in I Corps. Throughout the 10,000 square miles that stretch from the demilitarized zone to Quang Ngai province, 300 miles north of Saigon, the Marines have been the major U.S. combat force in I Corps since they arrived in large numbers in 1966.

And they have been backed up from the beginning with all kinds of computers that have to be seen to be believed.

Mobile Van Units

Take, for instance, their mobile van units. One of these is a 1401 disk system used in support of the 1st Marine Aircraft Wing.

The operators come to work with their weapons, and when it is time to pull platoon duty, they grab their guns and go. Imagine trying to maintain a production schedule when you run jobs in between partrols!

To help things along, the computer and all the peripheral equipment is housed in a leaky, rubber air-filled covered van that lets in dust and water and is never properly air-conditioned.

But the two 2311 disk units don't seem to break down and none of the equipment has developed operating quirks. Actually, they have been in continous operation since 1966 with just normal preventative maintenance to keep them going. If IBM hasn't bragged about this performance, it is missing a good story.

This unit, one of four mobile units the Marines operate in I Corps, maintains several classified computer applications plus an important aircraft parts control system and normal supply and accounting jobs.

The classified work concerns readiness evaluation, combat activity, flight activity, and status of forces. They may be operating under severe conditions, but they have not scaled down the use of computers in the field; if anything, there is a greater use of computers here than in non-combat zones.

At the other end of the scale, the Marines operate one of the most modern data processing centers in Vietnam. The Force Logistics Center (FLC) that provides logistical support to all Marine activities in I Corps, and to other military services in the area as well, has a large, spic-and-span computer center near the port city of Da Nang.

The computer center is kept so clean that the operators have to wash off their boots in a barrel of water everytime they go inside.

Operating Since 1966

Like the mobile units, this main computer center has been in operation since 1966. They upgraded from IBM 360/30 to 360/50 in 1969. They have two 524K 360/50 computers back to back, with

(Continued on Page 22)

B500 Series Tied Into TC500/700 Terminals

By Frank Piasta
CW Staff Writer

DETROIT – A remote front-end communications processor that can connect remote Burroughs TC500 and TC700 terminal computers to B500 Series data processing systems and other general-purpose computers has been developed by Burroughs.

The DC1000 Series of programmable data communications systems permits controlling of peripheral devices at remote locations, as well as the concentration and preparation of data collected over communications lines.

The data can then be transmitted to the central system over high-speed communications lines at a total throughput rate of 4K byte/sec. The programmability of the DC1000 Series, Burroughs said, permits maximum flexibility in connecting terminals and peripherals to the system, and in connecting the DC1000 to central data processing systems.

Two Model Groups

The DC1000 Series is made up of two model groups, DC1100 and DC1200, each designed for a specific type of data communications environment.

The DC1100 functions as a remote peripheral controller, providing control for directly cabled card, paper tape, and line printing devices while maintaining a high-speed communications link with the central system. The DC1100 excels, Burroughs said, in applications requiring remote batch transmission, remote printing and preprocessing of data prior to transmission.

There are three basic systems within the DC1100 Series–the DC1101, DC1102, and DC1103.

The DC1101 basic system consists of the central processor, and console printer-keyboard.

The 1102 basic system consists of the central processor, console printer-keyboard, and a 200 card/min card-reader.

The 1103 basic system consists of the central processor, console printer-keyboard, 200 card/min reader, and 100 card/min punch.

Other peripherals, such as the B9245 300 line/min printers, B9120 500-1000 char/sec paper tape reader, and B9220 100

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On the Inside

POSTMASTER: CHANGE OF ADDRESS FORM 3579 to be sent to Computerworld Circulation Dept., 797 Washington, Newton, Mass. 02160.

License Data Banks Only After Hearing, Westin Tells Credit Bureau Bill Session

By a CW Staff Writer

WASHINGTON, D. C. – Computerized data banks should be licensed, and a public hearing should be held before each license is issued, urged Prof. Alan F. Westin at hearings on the Sullivan Credit Bureau Bill [CW April 1, March 25].

"The elements of centralization, consolidation, and greater circulation of information that computerization so often creates ought to represent the crossing of the threshold that sets off a licensing-type proceeding," Westin explained.

Westin is professor of public law and government at Columbia University and head of the National Academy of Sciences Study of Computer Data Banks and Civil Liberties.

Should Be Precedent

In general, Westin supported the Sullivan bill and declared: "I hope this will be a precedent for similar, careful, and balanced legislation in other fields in which dossiers and data banks are beginning to be relied on more heavily than before, . . . especially government data systems dealing with such matters as law enforcement, welfare, and taxation."

Although Westin argued that the bill should be strengthened by the inclusion of a licensing provision, he also said that some portions of the bill were too strong.

In particular, he argued against a provision which would prevent credit bureaus from requiring persons who wish to see their records to first grant the credit bureau legal immunity. Westin declared that reporting agencies should be immune from legal action for "ordinary negligence," the kind of occasional mistake or error that human beings can make when they are taking care but are not acting with unusually strict procedures."

'Burdensome and Restrictive'

The Sullivan bill, as presently written, would allow a person to sue for the amount of damages he incurred because of such an error. But the bill was strongly opposed as "unduly burdensome and restrictive" by Harry F. Jordan, chairman of the board of Credit Data Corp. (TRW Information Services, Inc.).

Credit Data is the largest computerized credit reporting service, and introduced relatively strong privacy and accuracy guidelines several years before this became a public issue.

Credit Data's guidelines are adequate, according to Jordan, who said that the Proxmire bill is sufficient to make those policies applicable to all credit reporting agencies. The Sullivan bill is much stronger than the Proxmire bill, which was passed unanimously by the Senate last year.

Jordan also charged that the Sullivan bill did not adequately consider computerization. For example, the requirement that a reporting agency keep on file the names of all persons who received information during the past five years would sharply increase storage costs, Jordan said. Credit Data now keeps that information for three to six months.

Also, Jordan said, the bill "seems to give the individual the right to handle and read his own file. This would be meaningless to an individual in the case of a computerized file."

Finally, Jordan argued that to be required to supply to subscribers a consumer's statement on a disputed item would lose "the cost and time efficiencies inherent in a computerized operation." Instead, he urged that reporting agencies be allowed to use a "clear and accurate codification or summary of the consumer's statement.

Credit Reporting

Jordan made several general statements in support of computerized credit reporting systems, and Credit Data in particular:

- "It has been Credit Data's experience. . .that the incidence of error is less with the computerized files than with manual files. This is so because the bulk of the information contained in the computerized files is taken directly from the computerized accounting records of our subscribers."
- "The computer not only can forget, but must forget, if storage costs to a private corporation are not to become prohibitive. Thus, Credit Data builds a case of amnesia into its computer programs. . . . Storage costs can run as much as half of the total computer cost. Consequently, the storing of information which is old and outdated simply cannot be permittted."

Thus, it is not economically feasible for a computer to have "total recall", and the computer will not destroy the "part of our civilized tradition that all men have the right to rectify or live down past transgressions," Jordan said.

What is a Bankruptcy?

Royal E. Jackson, chief, Division of Bankruptcy, Administrative Office of the United States Courts, urged that credit bureaus be required to distinguish between a consumer bankruptcy, where a person may not pay off his debts, and a "wage earner proceeding," where an employed debtor pays off all of his debts within three years.

Although many credit bureaus record wage earner proceedings as bankruptcy, Jackson said that this is incorrect, and that someone who has completed a wage earner proceeding should be viewed as a particularly good risk because he has demonstrated that he can pay off his debts.

Finally, Jackson urged that credit bureaus be required to distinguish between bankruptcies due to over-indebtedness and bankruptcies due to disaster, accident, or other cause beyond the control of the debtor.

The Sullivan Credit Bureau Bill was filed by Rep. Leonor Sullivan (D–Mo.). Hearings are being held by the House Subcommittee on Consumer Affairs.

DC1000 Series Allows Controlling Of Peripherals at Remote Sites

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char/sec paper tape punch may be added to the basic 1100 systems.

Core memory storage ranges from 4K to 32K bytes in 4K modules. Memory cycle time is 1.5 μsec/byte. Data transmission rates range from 1,200 bit/sec to 9,600 bit/sec.

Lease prices of the DC1100 systems range from $778 to $1,411 a month. Purchase prices vary from $35,760 to $65,280. A typical 1102 configuration, equipped with 4K bytes of memory and a line-printer would lease for $918 a month.

The DC1200 functions as a remote peripheral controller and as a remote terminal concentrator, providing programmed concentration of data received over low-speed lines from terminal devices and subsequent relay of data over a high-speed line to the central data processing system.

The DC1200, Burroughs said, is intended for applications requiring terminal concentration to a central data processing system, and preprocessing of data prior to transmission. When equipped with peripherals, the DC1200 combines remote batch transmission and remote printing tasks with terminal concentration.

The DC1200 remote concentrator acts as a programmed clearing-house for up to 64 low-speed data lines. Messages from remote or local terminals are concentrated into core memory buffers for subsequent relay over high-speed communications lines to the central data processing system.

There are three basic systems within the DC1200 Series–the DC1201, DC1202, and DC1203.

The DC1201 basic system consists of a central processor, console printer-keyboard, and a 16-line control unit.

The DC1202 basic system consists of a central processor, console printer-keyboard, a 16-line control unit, and a 200 card/min reader.

The DC1203 basic system consists of a central processor, console printer-keyboard, 16-line control unit, 200 card/min reader, and 100 card/min card punch.

In addition to the peripherals available with the DC1100, the DC1200 can be connected to the TC500 and TC700 terminal computers, either by direct cabling or over communications lines.

Terminal equipment can include B9351 and B9352 CRT controllers, Teletype models 28, 33, 35, and 37.

The DC1200 will also interface through Bell 103, 201, 202 data sets and 801-autocall units. Modems up to 4,800 bit/sec can be accommodated.

Core storage ranges from 4K to 32K bytes of 1.5 usec/byte memory. Data transmission rates range from 45 bit/sec to 1,200 bit/sec, asynchronously, to 4,800 bit/sec, synchronously. Line-control devices can be extended in 16-line increments to a maximum of 64 lines.

Lease prices of the DC1200 systems range from $938 to $4,992 a month. Purchase prices range from $40,800 to $281,420. A typical DC1202 system consisting of 8K bytes of memory, a console typewriter, a 16-line controller, and 16-line adapters would lease for $1,086 a month, according to Burroughs.

All programming will be done through the use of an assembler. Another version of the assembler that will allow a B3500 to be used to assemble DC1000 programs will also be available.

Initial deliveries of the DC1000 systems are scheduled for the second quarter of 1970.

Scientists Have Direct Access To Experimental Neutron Library

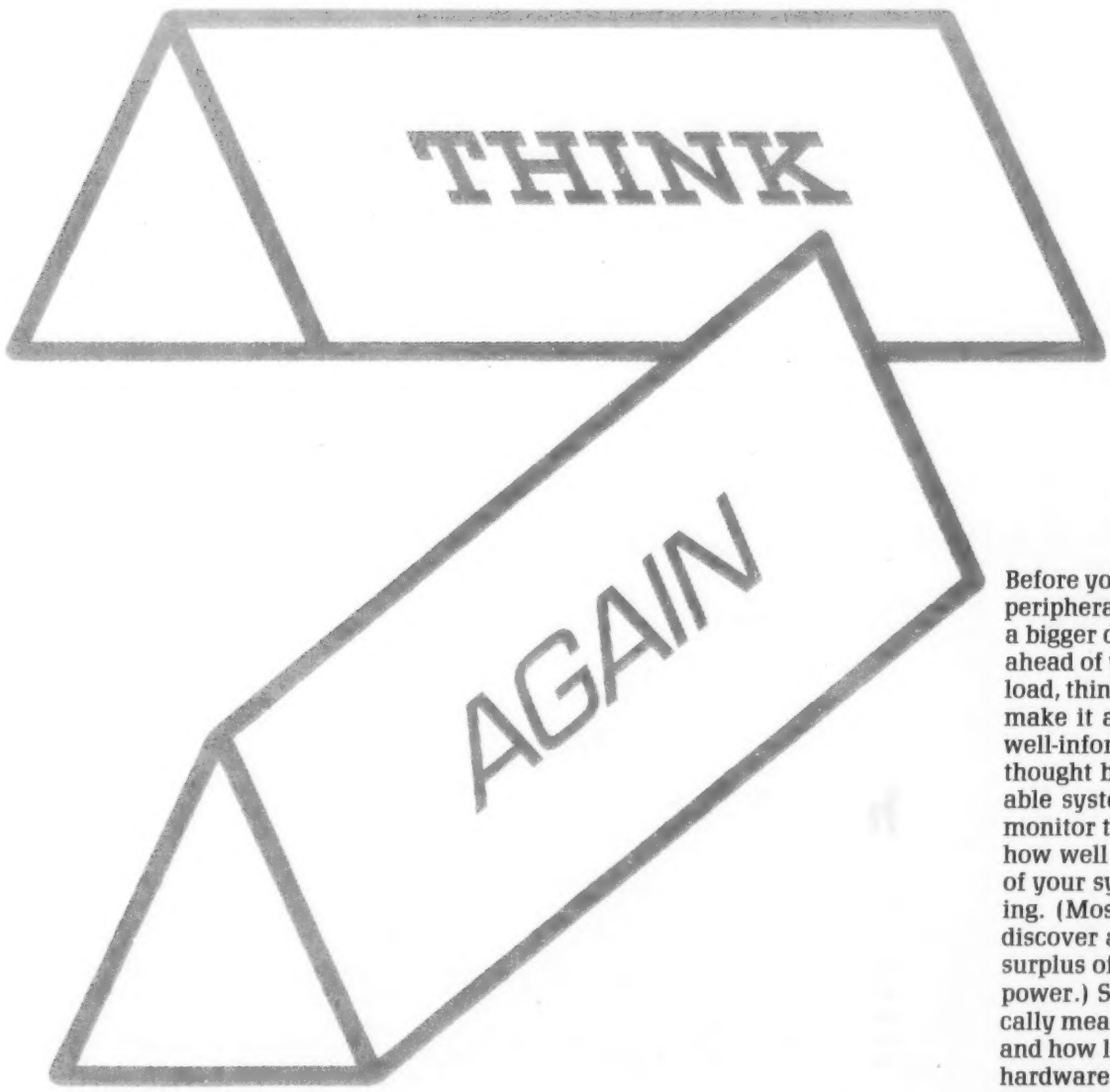
UPTON, N.Y. – The installation of a time-sharing computer at the National Neutron Cross Section Center will allow researchers and engineers studying nuclear energy and building reactors to have quicker analysis of their experimental data and quicker access to a massive data base.

The center was established at the Brookhaven National Laboratory (BNL) in 1967 as an outgrowth of activities beginning in 1951. It is a facility for collecting, analyzing, storing, and disseminating nuclear experimental data created at government and private laboratories throughout the world.

Requests for information average about 50 each month, and the data handling operation is extensive. The experimental neutron library, which contains data on nuclear experiments, presently exceeds one million data entries, which are continually updated. This library is growing at a rate of 25% annually.

A second library is comprised of nuclear reactor data which incorporate evaluations of much of the information found in the experimental library.

The center's PDP-10 features 40K of 36-bit word core memory, a high-speed line printer, three magnetic drives, a card reader, a point plotter and eventually will have disk packs with storage capacity in excess of 10 million characters.



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Mass. Official Urges State Control Computer Schools

(Continued from Page 1)

In New York, the Educational Computer International School closed last fall, and Lefkowitz expects the students will have trouble collecting on the $10,000 surety bond, but he intends to follow the problem closely.

Three such schools have closed recently in the Greater Boston area, but the consumer division helped place students of all three schools into other institutions. In many cases, this was done at no cost to the students.

However, Epstein said that he was "fed up" with picking up the pieces of a broken educa-n, and that the Department of Education should regulate all schools. He added that the attorney general had propsed legislation to that end.

Noting that many "business-type" schools do not file financial statements, course curricula, or teacher credentials, Epstein said that the proposed legislation would fill that need.

One of the three schools discussed by Epstein was the Institute for Computer Technology (ICT), whose unannounced closing was reported in CW, Jan. 28.

Two branches of Programming Systems Institute (PSI), in Boston and nearby Lawrence, also closed recently, reportedly because of low enrollment.

Epstein said that there were students at PSI for 11 months, "and they never saw a computer. They never had a textbook," after investing $1,300 or $1,400 or even $2,000, Epstein charged.

Stepped Into the Void

The consumer chief alleged that nobody in authority knows the curriculum of these unlicensed schools. The consumer division, he said, has "stepped into the void" to police such practices as misleading advertising, contract violations, or false sales representations.

The proposed legislation would also require background statements and licensing of salesmen. Epstein noted that this might have the side effect of keeping a good school in business, since information for possible loans would be available from the state.

Epstein said that his intent was to "license every single unlicensed school of any kind that is doing business" in Massachusetts.

He accused "business-type" schools, including computer, charm, and broadcasting schools, of defrauding the public with misleading advertising and financial irresponsibility.

"Computer schools happen to be among the worst violators," he charged, "and we have to clean up" the situation.

He noted that salesmen sometimes promised refunds, "If you don't like the course." Epstein added that salesmen would promise exorbitant salaries to prospective students.

Sometimes, a $250 or $300 non-refundable deposit, actually a salesman's commission, was required before enrollment, he added.

Requiring these schools to obtain a license and answer to the state would eliminate problem schools and create a better learning environment for the survivors, he indicated.

The licensing procedure would include filing a surety bond to protect students if the school should fail.

Controls at State Level

Some states have laws and specific procedures for proprietary education. They deal with home study courses, as well as franchised institutions.

New Jersey, for example, requires all educational institutions to be licensed by the Department of Education.

Vocational director Donald R. Amiott said that the controls in New Jersey have prevented the establishment of "fly-by-night" schools, and therefore, have also prevented precipitous closings.

He recalls, however, a recent instance in Philadelphia ("just across the Delaware River from New Jersey's capital"), where data processing students reported to a franchised school for their final exam, only to find the building padlocked.

Students were "automatically transferred," read a note tacked to the door, but the students had nonetheless been the victims of an unannounced closing.

Amiott also said that the Educational Computer Programming Institute (ECPI), based in New York, has about a half-dozen operations in New Jersey. The publicly-owned company recently took on scores of students affected by the PSI closing in the Boston area.

Amiott added that franchise chains may have to rely on public ownership in order to survive in a competitive environment.

Don Madden, executive director of the Association for Computing Machinery (ACM), said that the growing number of disreputable schools is "duping the public, rather than providing sufficient training."

He said that some "charlatans who are not instructors are trying to cash in on the glamor of operating computer schools."

Madden indicated that in about five years, there might be enough accrediting agencies and accredited schools "to burst the bubble" of fraudulent computer education.

Compso West Consensus Backs Exhibitions, Cites Poor Promotion

By Phyllis Huggins
CW West Coast Bureau

ANAHEIM, Calif. – A CW survey of the nearly 60 companies exhibiting at the Compso West Show April 7 to 9 at the Convention Center here has shown an almost unanimous approval of such shows and a desire to continue the exhibits.

The few exceptions to endorsement of the shows were from companies that could be classified as major show participants.

Honeywell OEM Division said: "More people are needed at these shows for us." Electronic Assoc. Inc. (EAI) which had a large booth featuring its graph plotter, echoed the same sentiments. Computer Sciences Corp., featuring its Infonet service and software capabilities, said it was undecided.

All the exhibitors agreed that the shows needed more advertising and promotion. A frequent complaint was that exhibitors had to invite the visitors to the show, each inviting individually from 500 to 10,000 persons, and that most of the people they invited had never heard of the show. "We had to do the promoting to get people here. Compso didn't do it" was the way one man put it. They deplored the lack of prepublicity.

Compso management said that it sent out 150,000 direct mailing to management level people and ran an ad in the Los Angeles Times. The basic premise of the shows was endorsed by everyone–regional shows featuring peripherals and software. The EAI representative defended his presence because of the scarcity of computer shows in the West. "Until they get adequate convention facilities out here I don't know how the western interests can be served. Having the Fall Joint Computer Conference in Houston is not a representative western market."

Hardware at L.A. Show

Compso said that the Los Angeles show may equal in attendance New York's which had 7,000 attendees. The Chicago show had lower attendance, estimated at between 4,000 and 6,000. Other differences cited in the shows was that New York had a much higher representation from software houses while Los Angeles was predominantly a hardware show. It was also pointed out that there have been twice as many exhibitor reservations for next year's Los Angeles show as for this show at the same date.

This winds up Compso's first test year in operation. The overwhelming consensus is that the shows are needed, if only to give repeated exposure to smaller companies with more difficult marketing needs than the major corporations. But the show management is going to have to put out more in professional support so that the exhibitors don't feel that they are bearing the burden alone.

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Will IRS Subpoena the Computer to Obtain the 'Digested' Facts?

Special to Computerworld

SEATTLE, Wash. – Do computers literally swallow data?

That was the implication of an article in a Seattle-area newspaper recently. In an article headlined "Warrant-Eating Computer Spurs Changes," the Kent News-Journal described the loss of a city warrant for $543. According to the article, the computer "ate up" the warrant. The article also stated that the warrant was "lost in" the computer.

The truth of the matter is less exciting but more mysterious. The warrant did indeed disappear, according to Gaylord Westby, manager of Computer Operations for Peoples National Bank, which handles some of the city of Kent's data processing. Although it is "physically impossible" for the warrant to be lost in the hardware, said Westby, no one knows what became of it. Undoubtedly it was lost in the human handling procedures.

As for the "Spurs Changes" part of the headline, the truth was stretched a bit there, too. An accounting system soon to be adopted by the city will obsolete the use of warrants such as the one which was lost, according to City Treasurer Margaret Drotz. The change, however, has nothing to do with the feeding habits of the bank's computer.

The story does have a happy ending. The Kent City Council authorized Mrs. Drotz to pay its bill based on a photostatic copy of the missing warrant.

But this legal question remains: Can a computer which "eats warrants" and "spurs changes" be soothed by a simple newspaper retraction? Or will it sue?

Computer Says 2 Isaiahs Wrote Biblical Books

JERUSALEM – Computer tests have proven that two Isaiahs, probably living 200 years apart, wrote the Biblical book of Isaiah, according to a Hebrew University doctoral thesis presented here.

The tests, which analyzed stylistic and linguistic details, showed that chapters 40 to 66 of the prophet's work were written by a second Isaiah, a contemporary of the Persian King Cyrus, believed to have lived in the year 530 B.C. and to have witnessed the rebuilding of the temple.

Hebrew University professors say the probability of the first Isaiah's also having written the chapters attributed to the second Isaiah is one in 100,000.

Disputed for 150 Years

The thesis, presented by Yehuda Radday, a Biblical scholar, is believed to be the first major study to be completed with computer programming in the field of Biblical research.

If generally accepted, it will end a dispute that has raged among Biblical scholars for the past 150 years over the existence of one or two Biblical Isaiahs.

Radday, who is in charge of Biblical teaching in the department of general studies at the Haifa Technion, set out on his research project certain there was only one Isaiah.

But after the computer tests he became convinced to the contrary.

He submitted each of the assumed two Isaiahs to a series of tests on minor statistical features which typify a person and can serve as a hallmark for his authorship.

These included length of words and sentences, frequency of certain expressions and orderliness in the arrangement of various linguistic features.

On every test, material after chapter 40 proved to be a sample of writing by an entirely different person from that in chapters one to 40.

Now for Only $69.95 Your Own Computer

NEW YORK – "Now at popular prices, a full-fledged computer for home use!" This slogan has now become a reality with the introduction of the "compulogical tutor" by Compusad Inc., a company involved in the manufacture of academic computer trainers.

All the concepts on which modern commercial computers are based are exemplified and actualized in the device, according to the company.

Although it resembles a sophisticated game, the compulogical tutor can give the average untrained person a working knowledge of computers, and an eight-year-old child can work problems on it in only 20 minutes, the manufacturer said.

By using the machine, an individual can learn to understand the fundamental concepts of Boolean algebra, logic building blocks and symbols, truth tables, basic theorems, computer circuits, the functional aspects of all digital computers, decision-making logic, error detecting logic, computer storage and programming, and other aspects of computer usage, the company said.

In illustrating these concepts, the machine has the capability of adding, subtracting, multiplying, dividing and performing intricate operations in millionths of a second.

In addition, it shows how to apply the computer to practical problems in accounting, economics, and finance, the company said.

The small (four lbs.), desk-size, portable unit comes complete with all circuits, controls, and logic blocks, and operates on standard dry-cell batteries.

Included with the unit is an instruction manual that explains all modern computer concepts and outlines many specific problems that can be worked on the machine.

The compulogical tutor can be ordered direct from the manufacturer for $69.95. The address is 16 Wetmore St., New York Mills, N.Y. 13417.

Students receive instruction in operating the "compulogical tutor."

Job Data Banks Can Help Close 'Skills Gap'

WASHINGTON, D.C. – Cities throughout the nation may be able to head off major shortages of skilled labor in the 1970s with the help of computer technology, according to U.S. Rep. George Bush (R–Houston).

In a speech before the National Alliance of Businessmen (NAB) in Dallas recently, Bush, who this year is running for the Senate seat now occupied by Sen. Ralph Yarborough, said that in the 1960s the country faced job shortages. In the 1970s, these shortages will be even more acute in areas such as teaching, sales, social work, and other skilled trades.

What Bush terms the "skills gap" can be closed by legislation, and by innovative ideas like the national job opportunity survey, which will collect nationwide data on jobs, labor supply, and skills, and will provide a nationwide communications system to make this data available to vocational educators, placement counselors, and to business.

By the end of June of this year, computer job banks are expected to be operational in 55 major metropolitan areas, Bush said.

Mobile Computer Van Simulates Tactical Air Operations Exercises

By Harvey Elman
CW Staff Writer

HANSCOM FIELD, Mass. – A mobile van equipped with a small electric power generator, computer, display scope, high-speed printer, and communication gear has been developed as an extension of a fixed Air Force facility here and can be driven or airlifted to potential military users to simulate tactical air operations exercises.

"Today's tactical air commander faces a serious problem," according to an Air Force spokesman, "of having too much information and not enough time to assemble it, assess it, and act upon it with maximum effectiveness."

To minimize this time lapse between planning and execution of tactical air operations, the Air Force Systems Command's Electronic Systems Division (ESD) here is developing a "testbed" program called Tactical Data Automation (TDA).

'Testbed' Program

According to TDA project director Col. Daniel E. McPherson, the "testbed" program is a "long-term application of computerized tactical air command and control planning and operation."

Jointly engaged in this program with the Mitre Corp., ESD is developing "distributed" DP hardware and software to be utilized with a large central processor, smaller satellite computers and, finally, mobile computers which can be employed by front line tactical air commanders for last-minute changes of battle plans.

An IBM 1800 is the apex which summarizes data to produce long, linear programs. This central processor is the user in a real-time environment, according to Paul Dittman of Mitre's TDA.

DEC's PDP-8 buffers message flow between user stations and the central processor, with routing accomplished through message formats and queries. Two peripheral processors are fixed in the "testbed" lab; the other in the mobile van. A PDP-8/I reformats data from display routing.

By spreading the data handling process among smaller computers, routine computations can be handled by less sophisticated minicomputers in the system, thus freeing the central processor 1800 to perform more complex tasks such as battle preparation, trend analysis, report generation, and replanning.

A computer-equipped mobile van is loaded aboard an Air Force C-124 aircraft to demonstrate capabilities of a new Tactical Data Automation Development Program being conducted by the Air Force Electronic Systems Division. The van, which ties into a fixed computer "testbed" facility at Hanscom Field, is used to simulate tactical air operations exercises for potential users of the system now under development.

Computer-equipped mobile van, used to simulate tactical air operations, is loaded aboard an Air Force C-124.

Two Colleges' Computers Temporary, Official Says

DENVER – The new computers at two state-run institutions of higher learning [CW, April 8] are only temporary, according to the commissioner of Administration.

Bernard E. Teets said that Commumity College of Denver (CCD) and Metropolitan State College received the computers so that students could get promised "hands-on" experience before completion of data processing courses this semester.

CCD is a junior college, and is in the second year of its two-year data processing course. It received what it requested, an NCR Century 200.

Metropolitan also received its request, an XDS Sigma 5.

Teets took office on March 2, and promised to give high priority to Colorado's computer problems.

These problems included delays in approvals of computer orders for state-run colleges, and these temporary installations were made to fulfill good-faith promises of hands-on experience, Teets said.

He indicated that both vendors agreed to a 90-day trial period, and the choice of NCR and XDS was based solely on cost.

He said that this would give the Department of Administration and the Commission on Higher Education more time to study requests for vendors' proposals.

He said that the temporary installation would not be used as a guideline in determining the final computers for the colleges, except that any failures to meet specifications would be uncovered.

Teets added that there are seven vendors interested in the state order, including IBM, XDS, and NCR.

Told to Halt Ads

Computer Dating Bureau Curbed

LOS ANGELES – A Superior Court justice here has ordered the operators of a computer dating firm to stop advertising the use of computers for the purposes of matching prospective couples.

Judge Richard Schauer issued the preliminary injunction following a suit brought by the attorney general's office against Compatability Systems Control Inc., also known as Matchmakers Inc., of 6505 Wilshire Blvd.

The suit is being prosecuted by Asst. Atty. Gen. Andrea S. Ordin, who charged that the firm fraudulently represented that electronic computers were being used to evaluate data and to match clients. (See CW, Feb. 25.)

In addition, the suit charged that Matchmakers falsely claimed that data was obtained through private background investigation of each client, psychological investigations, and intelligence tests. The company allegedly charged fees of up to $395 for its services.

Spokesmen for Matchmakers were not available for comment.

To support the misrepresentation charges, Mrs. Ordin filed sworn affidavits by state investigator Floyd S. Couch and a number of dissatisfied, former clients of the company.

Couch said that seven complaints against the company were presently before the state labor commissioner, and a number of clients were attempting to get their money back in small claims court.

In addition, he said, company officials Stu Perone and Thomas and Nadya Batchelor no longer lived at addresses given for fictitious business name documents and police commission licenses.

One woman said that she first became suspicious of the dating service when nobody asked to see her divorce papers. Since then, she said, she had studied data processing, and was convinced that even simple record sorting machines would have eliminated all of her mismatches.

Many of the dissatisfied, former clients complained that their computer matches did not meet their specifications. In addition, many of the people with whom they were matched were not registered, or even aware of the company's services.

Japan Firms Form Council

JAPAN – Supported by the Ministry of International Trade and Industry, 28 Japanese software firms have established a Software Industry Development Council.

The council will develop a common approach to such problems as the valuation of software, excessive competition, software security, and will generally be concerned with fostering the development of the Japanese software industry.

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The basic components of the Tempo I Computer and Communications Multiplexer can be combined with a computer interface and appropriate software to provide a powerful front-end which will improve the performance and data handling capabilities of large central processors. One or more communications multiplexers can be included in the system with each capable of handling up to 48 asynchronous full duplex data terminals. Lines are expandable in groups of eight. Additional features include: 12 program selectable baud rates per line ranging from 75 baud to 4.8 kilobaud, six program selectable character formats and automatic answering of incoming calls. Automatic handling of computer originated calls is optional. Synchronous *lines* are handled by single line controllers or multiplexers depending on requirements.

See Tempo equipment in operation at the Spring Joint Computer Conference... Display #13009-11.

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FCC Computer Inquiry Leaves Questions Unresolved

By Ronald A. Frank
CW Technical News Editor

WASHINGTON, D.C. – The tentative findings of the Federal Communications Commission (FCC) with regard to its computer inquiry [CW, April 8] raised more questions than it resolved. Most industry observers agree that the full impact of the ruling, if adopted in its present form, will not be felt for some time.

The commission's decision that common carriers must set up independent corporate subsidiaries to compete in the area of data processing services immediately brought with it the problem of enforcement.

One communications manager for a national company heavily involved in offering time-sharing services, told CW: "Unless adequate safeguards are maintained by the FCC to ensure that these independent subsidiaries don't draw on the resources of the common carrier mother companies, a slow erosion will occur that will ultimately find the common carriers completely involved in the field of data processing services."

At issue is the contention by commercial firms that common carriers would enjoy an unfair advantage in a competitive marketplace by virtue of their extensive research facilities and pricing structures which allow them to underwrite costs in non-profitable areas by drawing on revenues generated from profit-making services.

The carriers, however, have maintained that separate subsidiaries can totally divest themselves of any connections with their mother companies, while operating as normal profit-oriented commercial ventures.

As part of its tentative ruling, the FCC said all common carriers with annual operating revenues exceeding $1 million "shall furnish data processing services only through separate corporate entities." The commission further gave existing common carriers with subsidiaries "60 days from the effective date of the final decision [to] submit in writing a full description of the organization, facilities, and operations of their data processing affiliates . . . ."

In commenting on the effect of the subsidiaries, a spokesman for an independent time-sharing firm told CW that "we haven't begun to really feel the competition from the common carriers. The common carrier's position in the data processing services market is not yet well established."

Communications

One non-Bell carrier apparently anticipating the FCC's findings was United Utilities. In January, the carrier established a subsidiary to supply communications equipment to computer users. At that time the new firm said it intended "to diversify into non-regulated computer and communications equipment areas, participating as a manufacturing and selling organization to provide the computer data user with another source of commercially competitive equipment."

When the FCC ruling is finalized, this type of independent subsidiary presumably would have 60 days to detail to the commission its exact relationship with the parent carrier.

Although the FCC referred to the 1956 Consent Decree between the Justice Department and AT&T, the implications have puzzled some observers. Under the decree, AT&T was barred from providing computer-related services as non-tariffed items.

Under the tentative FCC ruling, in services where data processing "is incidental to communications within the meaning . . . of the Consent Judgment . . . . AT&T and its affiliated companies are free to furnish such a service." The commission added, however, that it intended to maintain . . . "careful and continous observation of the activities of the Bell System . . . [to ensure] . . . that such companies shall not offer data processing which is not clearly incidental to communications . . ."

One observer close to the situation said the issue was certainly not clearcut. In addition to the gray areas which could arise in defining the primary intent of certain Bell services, the observer told CW that the consent decree could in theory be modified."

"You can't say absolutely that because of the consent decree AT&T is barred. A consent decree traditionally has a life span of approximately 10 years after which it becomes weaker, and as circumstances change, the decree can be modified."

The observer added that since the Bell System was currently having problems meeting its communications commitments in certain areas, it would be "politically poor" for Bell to enter the data processing service area now.

The computer inquiry was launched by the FCC late in 1966 to provide a forum to explore the growing problems connected with "the interdependence of computers and communications services and facilities."

In citing the history of the inquiry, the commission said it had received 3,000 pages of comments from 60 parties representing a broad cross-section of interests in both the computer and communications fields.

As part of the inquiry, the FCC contracted with the Stanford Research Institute (SRI) to do an independent evaluation of the comments and submit recommendations based on the issues. SRI completed its findings in March, 1969, in a series of seven reports which, according to the FCC, dealt mainly with defining the nature and extent of the regulatory jurisdiction and control which the commission intended to exercise over the furnishing of data processing and communications services.

In its tentative ruling the FCC said that upon approval of its findings, the computer inquiry would be effectively terminated. Although this may be the official position of the commission, most observers agree that several important subjects relating to computers and communications still remain unresolved.

Among the still pending issues is the question of interconnection to the regulated common carrier telephone network by so-called non-carrier foreign attachments. The potential harm that may or may not be caused by this interconnection, together with a definition of what technical safeguards must be assured, is presently being investigated for the FCC by the National Academy of Sciences (NAS).

In discussing the question of privacy and security of data the FCC said its concern was not "coextensive" with this entire range of problems and it said that the NAS is also currently conducting a study for the commission to "determine the magnitude of the threat to individual privacy [from computer data banks]."

Interested parties desiring to present positions concerning the tentative ruling were invited by the FCC to comment by May 13.

Several firms affected by the tentative FCC ruling released the following statements to CW:

AT&T – "The computer inquiry served a useful forum for the exchange of views regarding the interdependence of computers and communications. The commission's tentative decision and proposed rules cover a number of points. The Bell System plans to file comments on May 13 as requested by the commission."

Data Transmission Co., by David H. Foster vice-president – "We are pleased that the tentative decision of the commission reflects the approach Datran used in its application where it spelled out the relationship between Datran and UCC. The Datran policy, which the commission also echoed in its position on the provision of data processing services by common carriers, is that separate equipment, facilities, personnel, and books of accounting should be utilized by the common carrier and the data processing entities. This will assure non-discriminatory rates for communications service in a competitive atmosphere for the time-sharing industry."

Association of Data Processing Service Organizations (Adapso), by Jerome L. Dreyer, executive vice-president – "The FCC recognized that we are part of the free enterprise system. Concerning the common carrier subsidiaries, we continue to press for total exclusion of communication carriers including their subsidiaries from the data processing business. We will bring to the commission's attention relevant evidence to justify this position as reflected in our files."

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Editorials

Passing the Buck

Two weeks ago we warned that the National Academy of Sciences study of data banks might be used as an excuse by other people to postpone action on regulation.

The first such case already has come to light.

The Federal Communications Commission, in its report on its computer inquiry, notes that privacy had implications well beyond the FCC's jurisdiction.

Then the report states that privacy questions "have already been the subject of congressional studies and hearings, as well as a matter of concern and analysis by social scientists, lawyers, and computer engineers. In this connection, we note that the National Academy of Sciences is conducting an investigation of public and private data banks to determine the magnitude of the threat to individual privacy."

In effect, the FCC is saying: "Don't worry about this problem because other people are taking care of it."

What the commission should have said was, "This is a very serious problem, but we don't have jurisdiction; therefore, we urge those with jurisdiction to start acting."

3,000,000 People for Sale

Until now, all the warnings about computerized data banks of personal information have been theoretical.

No longer.

Last week a company announced that it has a data bank on three million government employees.

How do you want your list? By type of employment? By agency? By sex? By supervisory position? Or you can order it based on a number of other parameters.

This is a classic example of how publicly available records, once computerized, can be manipulated to produce data on any selected group of people.

The records were available before. But the ability to retrieve selected information at any reasonable cost was not.

Now it is possible.

The point is not what this company is doing (preparing mailing lists for consumer sales promotions) but that there are no laws to control the ways that the information is used.

And no legal recourse for the people affected if the data is misused.

Psst, Got Anyone to Fit a Short, Slightly Balding Male About 35?

Letters to the Editor

Computerized Dating Has Great, Neglected Potential

Your recent news articles on the investigation of fraud in the operation of certain computer dating services focuses attention on an application of computers that I believe has the potential to become the most significant of any of the many uses to which computers are being applied. Yet today, this application has been rather neglected, if not completely overlooked, by many computer professionals and computer scientists.

I wonder what might be the effect of linking together many computer matching services in a nationwide or even worldwide telecommunications network so that a really significant part of the eligible population of the nation or world could be brought together in a common pool for computer matching?

The remarkable acceptance of computer matching services by many people today suggests that widespread use of computers in human matching could become a reality in the not-too-distant future. With computers doing the matching and operating upon a pool of several million individuals, the possibility of computers influencing the genetic development of the human race comes into view.

I should think that the potentialities in all this would call for more attention from the computing profession and the computing press.

Patrick C. Doherty

Palo Alto, Calif.

Your proposal would create a mammoth data bank crammed full of extremely personal information, a side effect that might outweigh the advantages of such inter-system cooperation. Ed.

DP Professionals Must Provide Data Bank Balance

Your recent articles [CW, Feb. 25, March 4, 11] on data banks and computerized invasion of privacy should sound a warning bell for everyone. A data bank, which is accessible to the U.S. Army and contains information on civil disturbances and non-violent assembly, reeks of a military state. The collection of data for this file from newspaper clippings and without proper verification is a practice none of us would implement in our own installations. Each of us as citizens should challenge the constitutionality of this; furthermore, as computer professionals we must raise our voices in protest. The recent suit by the ACLU against the Defense Department should be commended [CW, Feb. 25].

The concept of a centralized data bank is a worthwhile one but only if computer professionals will provide the proper balance between individuals' rights and the efficient use of data. On the local level all of us should review our own installations to guarantee that this is being done; on the national level through our professional organizations (ACM, AEDS, DPMA, etc.) we must demand the proper investigation of data banks and their impact. Without interest from the computer professionals, not only as concerned citizens but as qualified experts, the concept of a centralized governmental data bank could be used to control political action, the first step toward a totalitarian regime.

Richard B. Heydinger Jr.
Assoc. Director of Data Processing

Carleton College
Northfield, Minn.

The Business Is Run by the Boss, Not the Programmers

Your editorial "Year of the Tiger" [CW, March 11] misses a very crucial point. We computer people should stop kidding ourselves and realize that most profit-making organizations are run by directors, executives, and managers and not by analysts, programmers, and computers.

No board chairman or chief operating officer would dare tell his stockholders that the company did not make a profit because of a programming error. Why should we then blame the computer profession for the poor judgment shown by executives of some credit card companies?

As a person who is experienced with one of the most complex computer based billing systems – telephone customer billing – I can say that no telephone company management will tolerate poor and incorrect billing. Most telephone companies have entire organizations with substantial budgets devoted to the investigation and control of customer billing complaints.

I suggest we remember that no matter how highly paid we are, the business is still run by the boss.

Frank Vazquez
Consultant

ITT – Data Services
Mexico, D.F.

Computerworld welcomes comments from its readers. Preference will be given to letters of 250 words or less. *Computerworld* reserves the right to edit letters for purposes of clarity and brevity. Letters should be addressed to: Editor, Computerworld, 797 Washington Street, Newton, Mass. 02160.

Data Banks Will Be Abused So...

Let's Remedy What We Won't Avoid

"Your committee's bill would require the head of any federal agency to provide information needed by the secretary to verify information affecting eligibility or payment amount." This is a key phrase in H.R. 16311 (the Family Assistance Bill of 1970) which has just been reported out of the House Ways and Means Committee.

Coincidentally, one of the agency heads concerned, Secretary of Commerce, Maurice H. Stans, has just written to me (and probably to you as the letter was sent to millions of Americans). An italicized paragraph from the letter said: "Your answers to the census questions are confidential. They can be used only for statistical purposes. They can be seen only by census employees who are prohibited by law from disclosing them to anyone in or out of the government."

At the moment, Stans is able to justify his position. At the moment, the census law, and a number of other laws about data provided to the government, do prohibit information being spread around. But there is nothing to stop the law being changed by bills like the one quoted above. The reassurances of the government data collectors are therefore of dubious value.

No Opposition

Under these circumstances it might be expected that Stans would oppose the passage of laws which make his assurances misleading. However, the secretary has not seen fit to publicly do so, nor is there any sign that he proposes to oppose the bill. Indeed, despite his assurances, an examination of the 1970 form makes it look very much as though no one in the Census

The Taylor Report
by Alan Taylor

Bureau really takes the assurances as being more than formalities.

Telephone Numbers Statistical?

For instance, one of the questions (H1 second part) asks for your telephone number. Now I have used telephone numbers for statistical purposes in the past (remember the census data can only be used statistically). For certain applications, telephone numbers taken from a elephone directory are useful as random numbers. But I don't believe that the Census Bureau is going to use this telephone number as a random number. I think it's much more likely that (as was reported in the *Boston Globe*) it is going to use it to call any of the people listed on the census form and ask any question it feels like asking.

Now if anyone in the bureau really took its own assurances seriously, then this telephone number would probably still have been requested, but it would have been requested on the back of the form where you are asked to write the name of the person who filled the form out and the date. That would be the proper place for it, not in the body of the form itself. It is clearly improper usage where it is. But apparently the bureau does not care either – and that is the critical thing.

Head Must Verify, But . . .

Recently I commented on one possibility of safeguarding some data banks from abuse. This involved including with any data issued the details of the source, the date, and any verification that has been obtained [The Taylor Report, March 18, 1970]. There are other possibilities. For instance, going back to the authorization to get the data from a federal agency head. "Your committee's bill would require the head of any federal agency to provide information needed by the secretary to verify information."

About "Yes/No Verification"

If this is the standard way, then, in setting up a confidential data bank it might be said that provision for verification of informaion shall be provided only on a yes/no basis. This would involve a special group of programs being writen which could examine the data but which would not return any details from the content of the file itself. In particular, they would not open up the records for inspection. They would simply answer the questions with "yes" or "no." This would meet the requirements of the proposed law and would help stop fishing expeditions.

However, it wouldn't make the assurances that have been given by Stans any less misleading. Use of the records for checking welfare claims is certainly using them for nonstatistical purposes. To guard against any such broken promises, we might also require that details of the assurances that have been given are also kept with the data. These could be placed on tape ahead of a file, or in individual records. Any breach of these assurances, no matter how legal, should be the basis of a notificaion of breach of assurance by the appropriate officer to the person concerned – ahead of the disclosure being made.

These are two more possible ways of opposing the "Computers-Equal-1984" syndrome. It is really important for computer users to keep the CE 1984 syndrome down as much as we can. Computers and 1984 are currently inextricably associated in the public eye, and we will need to fight this in every way. Protection of data files from abuse is just one such way.

Beware of Computer Users Silent Majority

"The trouble with this industry is that it is guilty of massive discrimination of minority elements largely due to the indifference and complacency of the silent majority of computer users," said Claude Bitbinder, president of "Users for Integrated Data." "I know of some installations where the majority manufacturer's equipment is placed in a showcase center while a minority manufacturer's computer is stuck off in a back room.

"Furthermore, the other computer has to work around the clock and is given all the dirty jobs," he said.

Commenting on the inequities between minority and majority manufacturers, Bitbinder expressed some hope for integrated data centers. "Some users . . . let different manufacturers' equipment actually stand side by side. Some even put a minority manufacturer's equipment in the front and center. Of course, it is totally surrounded by computers, of another color, but it's a token of good faith," he said.

CW visited an integrated data center and asked a spokesman how the center handled the problem of potential dissension between the manufacturers' supporting help.

"We give them separate but equal facilities," the data center head said proudly. When it was pointed out to him that this was unconstitutional, he snapped: "These things take time. You can't force progress."

Huggins' View
by Phyllis Huggins

Further investigation showed that separate but equal facilities are not always maintained in some companies.

One disgruntled service engineer for a minority manufacturer snorted: "We don't have separate but equal facilities! Their office has a window in it. Furthermore, when their company representative comes, he eats in the executive dining room while our people have to eat in the employees' cafeteria."

An even worse case was reported at another company. "We don't have any facility at all. We have to stand at the back of the room. The only place I can sit down in that company is in the john."

Bitbinder said that busing of data might have to be done to bring about equal opportunity.

"This is a drastic measure as it would break up majority community patterns and cause loss of time while the data was in transit. However, something has got to be done to achieve the same standards for all data."

There are other signs of militancy appearing. The peripheral manufacturers recently took their revolt to the government and demonstrated against government discrimination. Since Washington is in the awkward position of having to set an example in cases of this kind, it had to do something.

The government established a policy to give equal hearing to peripheral companies. This did not totally satisfy them, since they wanted all computer systems to contain 10% of minority manufacturers' equipment.

One barrier delaying total integration is the problem of languages.

It is felt that the universities are upholding the status quo by teaching the majority manufacturer's language.

An alternative is to require that the languages of all the minorities be taught, since only in this manner can true learning, pride, and identification take place for the oppressed groups.

Bitbinder said that there is no reason to believe that the new activism will require the calling out of company guards.

"Integrated data can be achieved by peaceful means," he said. "All we want is equal rights for all, which brings us to the biggest problem of all. That is equal pay. Just no doubt about it, the minority manufacturers' equipment just doesn't command as high a price as that of the majority!"

"Everything You Say to It Will Be Kept in Strictest Confidential Tape Files."

Sociology of Computing

Commercial/Scientific Mergers Pose Managerial Crises

By Miles Benson
Special to Computerworld

Are commercial programs which do lots of number-crunching truly commercial programs?

Are scientific programs which do lots of data messaging truly scientific programs?

One way to answer such questions is to make them go away. If the computer user acquires hardware and software designed to service both kinds of user, the questions become academic. With the advent of third generation hardware, this answer has become commonplace.

Then a new question arises. If the commercial programmer and scientific programmer share the same computing facilities, should they remain in separate organizations?

One way to answer this question is organizational merger. But many of the computing shops which have chosen this solution have found special kinds of problems.

Commercial programming has traditionally been done in the data processing organization, scientific in computing. Commercial people produce giant systems of programs which run on a periodic basis. Scientific people produce programs of varying complexity, almost all of which run only on request.

Scientific people tend to have college degrees; commercial people may or may not. Scientifics are research-, creativity-, challenge-minded, while commercials are procedure-oriented and dollar-conscious.

Programming and computers may be valid common denominators to these two diverse functions, but tradition has imposed some significant barriers to merger. Those organizations, which have tried it, have had only varying degrees of success.

For example, company A and company B are in the aerospace business. Both companies once had separate data processing and computing organizations, which had little communication in common. Data processing units at both companies reported to the comptroller and computing reported to engineering.

Back in 1965, each company independently decided on merger. The results were rather different, but there were some startling similarities along the way.

First came the problem of aligning the organizations and selecting the managerial victors. In both company A and company B, the scientific manager, with his stronger collegiate background and product-oriented organization, won the number one spot. The commercial man took number two.

Then came the physical merger. The two groups, organizationally together, were shifted so that they could be physically together. With an increase in communication came an increase in problems.

At the worker bee level, there were small jibes, some friction, some competitive resentment. The manager in company A saw the problem coming, called mass meetings of both groups to discuss conditions, urged a "beer bust" to allow social contact to break down work-a-day barriers. Company B ignored the problem, and communication gradually deteriorated.

Viewpoint

But the real problems came at the middle management level, a strange pattern occurred at both companies. Scientific managers, confident in their challenge-oriented positions and strong technical organizations, exuded a subtle feeling of superiority which annoyed the commercial managers. Resentment built up among them, and parochialism began to spread.

Scientific managers, insensitive to the problem, made plans for the commericals which, due to lack of understanding, were not always valid. Commercials took to rejecting scientific suggestions whether they were valid or not.

Caught in the middle were scientific-sponsored research projects into the nature of long-range data processing problems, doomed to failure through lack of commercial participation; and scientific-sponsored development projects, which ran aground through inadequate cross-communications.

Company A pressed harder to solve the people problems. Special pains were taken to force conditions in which managers and troops would communicate. Special pains were taken to force compromise solutions. Special pains were taken to eliminate parochialism.

Company B never seemed to grasp the magnitude of the problem. A tall wall which physically separated the two organizations became a symbolic separation as well. Middle managers jockeyed for position failing to seek valid compromises. Parochialism, left to its own devices, dominated.

Time has not been able to tell the whole story of the success of the mergers, but there are strong observable trends. Company A, caught up in the contraction of the aerospace business, has been able to spin off a strong computing subsidiary in which innovative scientific and capable commercial personnel work together to apply new solutions to traditional data processing problems.

Company B, caught up in the same contraction, has been unable to crack this market. Scientific managers still tend to plunge forward without seeking commercial advice. Commercial managers have built parallel internal organizations, duplicating some of the communal but scientific-dominated service organizations. Attempts at securing data processing business outside the company have nearly all failed.

In the face of this information, several new questions arise. Is merger of scientific and commercial shops really desirable? If so, is it really practical? If so, how much effort should top management put into making it work?

Computing hardware may be entering its fourth generation – but computing sociology is still struggling with its first.

Computers Help Fashions

PUEBLO, Colo. – A computer will enable Isabelle's to merchandise its line of women's fashions according to demands of Pueblo women.

Information concerning sales and inventory will be entered on a machine in the store. The machine records the information on a tape which is then sent to the New York computer center. A report containing merchandising information is returned to the local store.

The program is sponsored by the National Retail Merchants Association.

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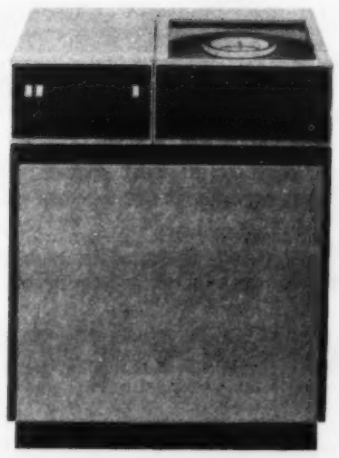
So, if you're an 1130 user with some growing to do, do it with the new 3610. For information, write: Memorex, Santa Clara, Calif. 95050.



MEMOREX

The Changing Systems Engineer--Part II

User Can Benefit From Taking Advantage of Options

By M.L. Stiefel
Special to Computerworld

Suppose a user owns a 360/30 with three tape drives and two 2311 disk packs. He's been using the system effectively for a couple of years to do his payroll processing and his inventory.

Still, he doesn't operate 24 hours a day. In fact, he realized that his equipment is underutilized, so he wants to get a smaller configuration. Instead, his data processing personnel convince him that an additional application would be worthwhile.

He decides that an accounts receivable program would indeed add measurably to his capability. As he has so many times in the past, he calls in IBM's Systems Engineer to advise him.

The SE discusses the problem with the user briefly. The next day, the SE returns with a proposal to do the work. He proposes to design the system, to bring in one of IBM's applications programs to be modified for the user, and to get the new application on the air.

"How much?" asks the user.

The SE replies that the job should take about six man-weeks of effort, on time and materials. He points out to the user that this is an estimate, not a guarantee.

Systems engineers representing computer manufacturers once appeared in users' offices with monotonous regularity, but now their existence is threatened. Users are seen making more selective use of SEs since they now have to pay for their services, from IBM and CDC, for rates ranging from $22 to $60 per hour. The users are likely to benefit, in the long run, because the manufacturers will have to maintain competitive levels of competence in their system engineering organizations.

After considering other alternatives, the user decides to go with IBM. They sign a standard IBM SE services contract and the work begins.

After the design is well under way, the user asks the SE for a specification for the program that will be modified for his use. The user examines the program, and finds that it won't do some of the things he wants.

He asks the SE whether certain specific modifications are possible. The SE says "Sure, but it will be more costly. This program isn't suited for the kind of change you want."

At this point, the user can elect to stop the work entirely, to have the SE continue on the original design, or to request the SE to make the more expensive change. Or, the user can ask the SE to completely document the system design for the system he now knows he wants. Then the user can go out for competitive bids on completion of the programming and implementation.

If the latter route is chosen, and if the documentation generated by the SE is well founded, then the user should have little or no difficulty getting fixed price bids from software houses for the remainder of the job. Then, presumably, he would own the resulting programs outright. If he used the IBM application program, he would only own the modifications.

This is not to say, of course, that every user will abandon IBM after the design is completed, to have the programming done by someone else. The process of educating a new contractor in the system requirements is time consuming and costly, no matter how well documented a design may be. The point is, though, that the user has this option if he needs it.

If the user requires his SE to furnish documentation, then the user maximizes his chances of getting what he wants in his system.

M.L. Stiefel is an independent consultant in the area of systems design. He has had extensive computer peripheral experience.

Sweden Studies Hospital Computer Record System

STOCKHOLM, Sweden – The advantages of using computers for hospital records storage and retrieval are being examined in an experiment presently being carried on in a number of Stockholm hospitals.

The experiment involves 10 hospitals in the Stockholm area, according to Professor Sixten Abrahamsson, a Swedish biochemist who devised the system.

This number will be increased to 40 hospitals by 1975-80 and will accommodate 20,000 in-patients and more than two million out-patients.

Hospitals participating in the experiment have available to them a full medical record of every previous patient. Basic data about new patients is also available. This includes important information such as sensitivity to drugs, blood groups, and disease conditions such as diabetes or heart conditions.

The system has been in operation for about 18 months, according to Abrahamsson. In that time, experimenters have found that half the acutely ill patients who appear at the hospitals are already fully identified in the hospital data bank, he said.

The data bank on the potential pool of two million patients in the Stockholm area is kept up to date partly through the national census, which supplies such basic information as names, age, and address.

What do you call the first and only
communications processor
that actually
cuts your computer overhead,
saves you line charges,
interfaces to any terminal,
concentrates data,
controls hundreds of lines,
or just a few,
and gives you remote batch and
on-line operations at the same time

Computer Handwriting Analysis Helps Job Hiring

By Peter F. Carr
CW Staff Writer

LOS ALTOS, Calif. – An electronics and computer expert-turned-graphologist is using a new technique to assist employers in hiring the right employees for the right jobs.

The inventor of the technique, John W. Sullivan, calls his system "Computerized Personality Evaluations." In addition to personnel screening, the technique can also be used for personality profiling for practicing and clinical psychologists, compatibility analyses for marriage counselors, and for personal evaluation of an individual's talents, Sullivan said.

Burroughs B5500

Sullivan operates the system out of his home here, and is tied in to a Burroughs B5500 through a teletypewriter terminal.

Sullivan took up graphology about five years ago as a hobby. "But when I got into it, after doing a lot of reading and research, I realized that there was really quite a lot to it," he said.

"When you write, you are expressing your total personality. The mind and the body are one unit," he said.

From this beginning Sullivan developed his technique, which eventually led him to quit his $25,000-a-year job at an electronics firm to devote full time to his Computerized Personality Evaluations system.

He now has a number of electronics, insurance, and real estate firms as clients.

To implement the system, Sullivan fed the knowledge of more than 30 world handwriting experts, and of books on the science of graphology into the computer. Thus programmed, the computer returns a graphological analysis in a matter of seconds. The same calculations could take the human brain many years, he said.

The personality evaluation begins when the job applicant writes out a two-page handwriting sample which Sullivan himself analyzes. He gives a score to each of 90 different writing factors which include pressure, slant, and size of margins and letters.

The results are then fed into the teletypewriter by means of punched paper tape. The computer program generates a ranking on each of 20 personality traits such as idealism, temper, audacity, shyness, and dominance, and prints out a tabular listing of the results.

Case History

Sullivan then takes over, and writes a case history of the applicant's personality. This includes a capsule summary of the individual's outstanding characteristics, as they relate to the client's requirements. For example, this encompasses suitability for specific types of work, interpersonal compatibility, and significant deviations from statistical norms.

Each client is furnished the computer printout, a personality profile chart, and a narrative discussion, all of which result in an unambiguous personality evaluation, Sullivan said.

Sullivan admits that there is a 5% to 10% chance that he could be wrong to some degree, such as overstressing or understressing a person's vivacity.

"But this would still be much less than a personnel director backed up by a trained psychologist," he said.

Sullivan predicted that within two years his organization will grow to 10-20 professional graphologist-computer specialists, with gross sales in the range of $50,000 a week.

Electronic System Aids Tax Record Updating

INDIANAPOLIS, Ind. – State Revenue Commissioner James O. Mathis recently introduced an electronic system that may generate millions of dollars of additional revenue for Indiana next year.

Mathis said the newly installed system represents an advanced approach in fiscal control. It supplies specialists with tax records that are a matter of hours old. Previously, months might have passed before some tax accounts were updated.

"Using this system," Mathis said, "we know on a day-to-day basis whether the state's approximately 180,000 businesses are up-to-date with their tax payments.

"Lost revenue from late or uncollected returns can cost each state millions of dollars a year," he said.

The Indiana system is built around two IBM computers, linked to approximately 30 terminals. The IBM 2260 visual display stations significantly speed the entry and retrieval of computer-stored records. Thirty more terminals will be installed by next January.

Speed and accuracy of the new electronic system is made possible through the use of approximately 30 of the TV-like IBM computer terminals – 2260 visual display stations.

Under the previous system of control, information regarding tax payments or taxes due was punched into cards, verified and checked for accuracy in separate, and sometimes repetitive, operations. Finally, the data was fed into a computer in a process that might consume days.

Now, tax information is keyed directly into the computer through the terminals. As she keys, an operator can read the 2260 screen and check the information for accuracy before she commits a record to the computer.

To retrieve data from the system, a request is now keyed into the keyboard. The computer retrieves the desired information from its files and displays the answer on the 2260 screen instantaneously.

"Tax programs frequently penalize the majority because of the oversights or failures to pay by the minority," Mathis said.

"This new system reduces the chances of a tax increase because we are collecting tax dollars that were overlooked in the past," he stated.

"And it permits the department to increase its tax income through interest earned on previously uncollected funds," Mathis said.

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Soviets Climb on Bandwagon—Endorse Computer Matchmaking

MOSCOW – The official Communist attitude toward computerized matchmaking has apparently changed from stong condemnation to benign approval.

A top Soviet scientist recently revealed that he not only approved of computer dating but believed it was "expedient for people to use computers to help choose a spouse."

Alsel Berg, chairman of the Scientific Council on Cybernetics, stated his views in the newspaper *Literaturnaya Gazeta* in a discussion of family problems.

"I don't see anything sacrilegious in applying mathematics to psychology," Berg said.

"Our society is interested in a scientific solution of the problems connected with family and marriage," he said.

"A computer does not impose anyone on anyone else," he continued, "It does not bind one person to love another. It only makes a meeting between a boy living in Moscow and a girl living in Vladivostock or Rio De Janeiro less of a chance happening."

Simulated Wave-Making Predicts Erosion Rate Along Shores of Lake Michigan

WILLIAMSTOWN, Mass. – Time may be running out for some of Lake Michigan's most desirable beaches according to a scientist here who is studying the effects of wind, waves and sediment on shorelines.

To test what effect weather conditions have on shore areas, Dr. William T. Fox of Williams College is making waves – but only on a computer.

Fox is simulating wave and weather conditions for some 1,000 feet of Lake Michigan shoreline about 90-miles northeast of Chicago.

Beach erosion is especially critical for Lake Michigan this year because the lake is at its highest since 1886, almost six-feet above the previous low-water mark. The higher the water level, the greater the chances of beach erosion.

For the past five years, the high waters have not only eroded Lake Michigan's choice beach areas but have caused cliffs to fall into the lake and shoreline highways to collapse.

Unfortunately, many residents who live or work along the lake were unprepared for the damage caused by such fluctuations in the water level.

Using an IBM 1130 to stimulate acutal conditions of shore areas, Fox hopes to obtain a set of mathematical formulae for predicting how varying weather conditions will alter any shoreline.

By mathematically increasing the size of waves or altering the contour of offshore bottom, the computer enables Fox and his associate, Dr. Richard Davis, professor of geology at Western Michigan Univeristy, to predict the erosion of any given strip of beach.

By adding data on tidal conditions, which has not been included in the Lake Michigan study because the lake has no tides, Fox and Davis believe they can forecast the effects of hurricanes and tidal waves on our coastlines as well.

"We're trying to study the erosion process where wave forces are involved so we can have a computer simulation model predict large-scale changes in shorelines," Fox explained.

"Once we can predict the amount of erosion that can be expected under certain meteorological conditions, we can intelligently decide where to place breakwaters and the best type of breakwater to construct."

Using a mathematical model simulation technique, Fox feeds data on the segment of Lake Michigan's shoreline into the computer.

This data includes the contour of the offshore bottom, frequency, intensity and direction of previous storms, wave height, direction and period, air temperature, barometric pressure, amount of sand removed from beach and amount deposited offshore.

In all, 17 variables on the interaction of weather, wave and sediment are fed into the computer. This represents data which has been collected every two hours over a 30-day period.

More than 6,100 separate readings, including information gathered by photographers in planes and scuba divers, are used to develop the simulation model.

The model simulation technique also will enable Fox to determine the cyclical effects of weather on shorelines. For example, preliminary findings indicate that wave conditions for Lake Michigan change every seven days. The lake's high and low levels also may be related in some way to sunspot cycles.

While Fox's main area of study is the strip of beach along Lake Michigan, he also is working on computer-generated wave models for several New England beaches at Cape Ann, Mass., Horseneck, Mass., and Watch Hill, R.I.

The professor's three-year study is being funded by the Office of Naval Research which hopes to use the technique to predict changes in near-shore bottoms and beaches.

Computer to Run Air Cargo Terminal At Tokyo Airport

TOKYO – Containerized cargo will be handled by a computerized cargo terminal at Tokyo's new international airport.

Japan Airlines presently handles about 30,000 tons of air cargo each year in Tokyo. The new terminal will be designed to receive 500,000 tons annually by the 1980s. Computers will enable this cargo to be sorted automatically.

Computer Scans Movies, Detects Heart's Dimensions

TORONTO, Canada – Researchers at Toronto General Hospital have devised a computer-based system for analyzing motion pictures of living human hearts. The system examines the pictures to determine ventricular volume, a physical characteristic that has a great bearing on the heart's ability to do its required work.

The work is being done under the direction of Dr. Douglas Wigel and Dr. Allan Adelman, who are administering the research at the hospital's cardiovascular unit. The research is funded through a grant from the Ontario Heart Foundation.

The computer system was designed by Dominic Covvey, a Ph.D. candidate in biophysics, who, under the direction of K.W. Taylor, Ph.D., is assisting the doctors in their research. Motion pictures of a functioning human heart are taken with an X-ray image intensifier/cine camera combination.

The film is then viewed with a TV camera connected to a device interfaced to a PDP-8/I. The pictures are scanned line by line by the device and the computer inputs and stores the data which is in the form digitized ventricle widths. From the information gathered and analyzed by the computer, it is possible for the computer to determine the dimensions of the heart and calculate the ventricular volume.

Other studies are being pursued in the areas of ventricular premature heartbeats and blood flow. Covvey and Digital Engineer, John Hughes, have collaborated in the design of systems built around the PDP-8/I for gathering and analyzing data and reporting results as teletypewriter printouts, plots, and CRT and oscilloscope displays.

Covvey and the computer are also aiding Dr. John Morch in his study of blood flow. With the aid of Hughes, Covvey has developed a binary coded decimal to binary converter to make counts of blood flow after a radio active substance has been injected into the blood.

The BCD to binary converter, when interfaced to the computer, makes it possible for the computer to study the correlation between the narrowing of arteries and the rate of blood flow.

Covvey claims that without the computer the research would be slowed to the point of ineffectiveness because of the number of manual operations that would become necessary.

The computer/photographic techniques were developed because the Toronto researchers found that conventional diagnostic procedures have left large areas of doubt about ventricular function, the degree of coronary vessel occlusion, and local muscle damage.

It is hoped that the computer-aided research methods will make it more possible to assess abnormalities and help to suggest methods that might be used to return hearts to their normal condition.

Inventory Control System Uses Conversational Language 'Focal'

MAYNARD, Mass. – A computer-based inventory control system, developed in a programming language designed originally for use in education, is helping Digital Equipment Corp. (DEC) to order parts for its line of computers.

The system uses a DEC PDP-8/L computer with programs developed by Ronald Chestna, a department supervisor, who had no prior computer experience. Chestna used Focal, a conversational language developed originally for the education market, but one that has found wide acceptance in a variety of other areas.

Focal uses a number of English language words and has been learned by grammar school students in less than two hours. Chestna got the idea for the system while teaching himself about computers and Focal.

The computer was installed late last year and Chestna worked evenings, learning more about the machine and writing the necessary inventory program. He expects the system to be in full operation early next month. It will be used by the company's metal fabrication department to replace a card file that lists computer parts on hand.

Production Forecasts

"We receive a production forecast every month," said Chestna. "It tells us the number of metal part kits needed in the next six months. Our job is to break down each kit by component and to make sure there are enough components on hand to provide the kits." The department must keep track of some 2,400 fabricated parts.

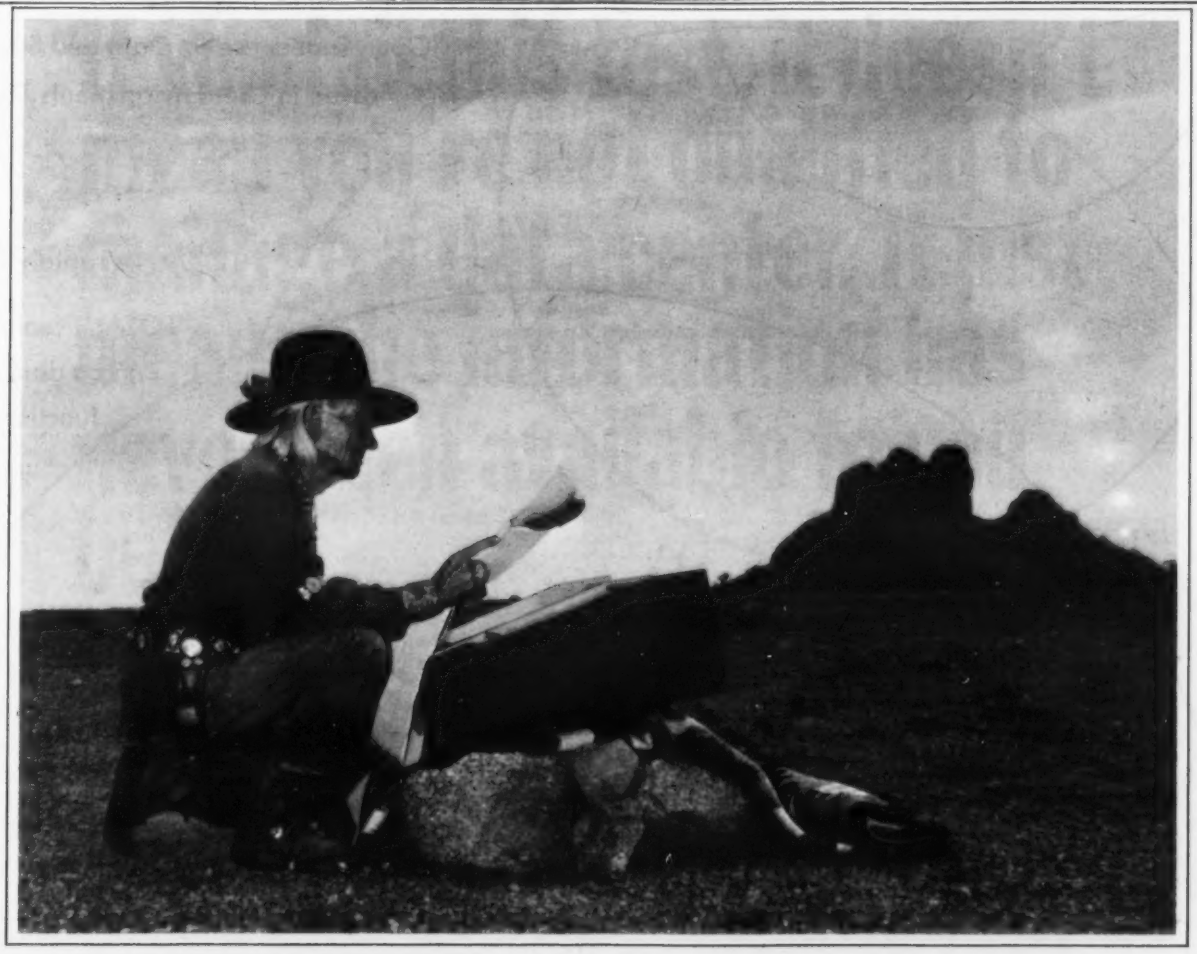
Before Chestna wrote the program, the component breakdown was done manually by two men, who wrote the inventory information on file cards. "It usually takes between 3-1/2 to 4 hours to break down the kits for an individual product," Chestna said, "and DEC makes well over 100 different models of computers and computer-related equipment."

Now, the computer will do the component breakdown, telling Chestna not only what part is needed, but also how many are on order, how may are already in stock, how much each component costs, and how many are used each month.

Inventory Control

"This gives us tighter control over our inventory," Chestna said. "We can tell the computer to run through the 2,400 parts and tell us which are close to their minimum stock balance. The computer checks the components in stock, and types the stock numbers of any that are in short supply. Looking through a card file and recording the parts we need could take several hours," he added. "The computer does this in a matter of minutes."

Chestna also finds it easier to prepare his monthly inventory report. "It usually took about two weeks to get the information together and write the report," he noted. "But by using the computer, I can have the information for the report in front of me in about three hours."



Texas Company

Computer Helps Map Pipelines, Powerlines

SAN ANTONIO, Texas – A Texas company is mapping powerlines in Wyoming and tracing oil pipelines in the Alaska wilderness with a computer that never leaves San Antonio.

Tobin Aerial Survey Co. uses an IBM 1130 system and a plotting device to generate these specialized maps. The information is gathered primarily from aerial photographs.

The utilities maps are so specific that each transformer and pole is shown, along with its exact longitude, latitude, and elevation. Pipelines thousands of miles long are mapped in similar detail.

"For many years power companies have used aerial photos and hand-drafted maps," said Greg Kepner, data processing manager of Tobin, "but today computer-produced maps are replacing them."

First Tobin photographed the entire city of Cheyenne from the air. From the pictures, photogrammetry experts established longitude and latitude coordinants for each pole, substation and transformer in the city.

The information was transferred to punched cards and sent to the computer.

Every Detail Recorded

From these pictures and coordinants the system turned out maps that showed the lines carrying electricity to each customer in Cheyenne.

"Every detail was recorded," Kepner said. "Now if a customer complains of power failure, a repairman, using the maps, can tell at a glance the substation providing that power and the actual pole that carries it to his house. Repair service has been greatly improved."

The computer-drawn maps offer many other advantages, too.

"Once the basic information is recorded on punched cards, we can update the maps every time poles are moved or circuits changed," Kepner said. "It just takes a few hours."

Future Planning Possible

Moreover, the system allows engineers to "modify" the city system without moving a single pole.

"If they want to project for a new plant or subdivison, they simply simulate it by adding the factors for the new installation to the existing system stored in the computer," Kepner said. "The computer can demonstrate how the new user's power needs would affect the entire system."

Tobin's Alaska pipeline mapping was similar to the Cheyenne power project, with the map being created from information gathered by aerial photos.

"These maps even show such things as ownership of the land crossed by the pipeline," Mr. Kepner said. "They're much more useful than the actual photographs."

The photographs are taken by special cameras mounted in Tobin's three airplanes. Pictures are automatically snapped at a regular interval so their images overlap. Back in the office, technicians piece together the prints until a composite picture of the entire area is created.

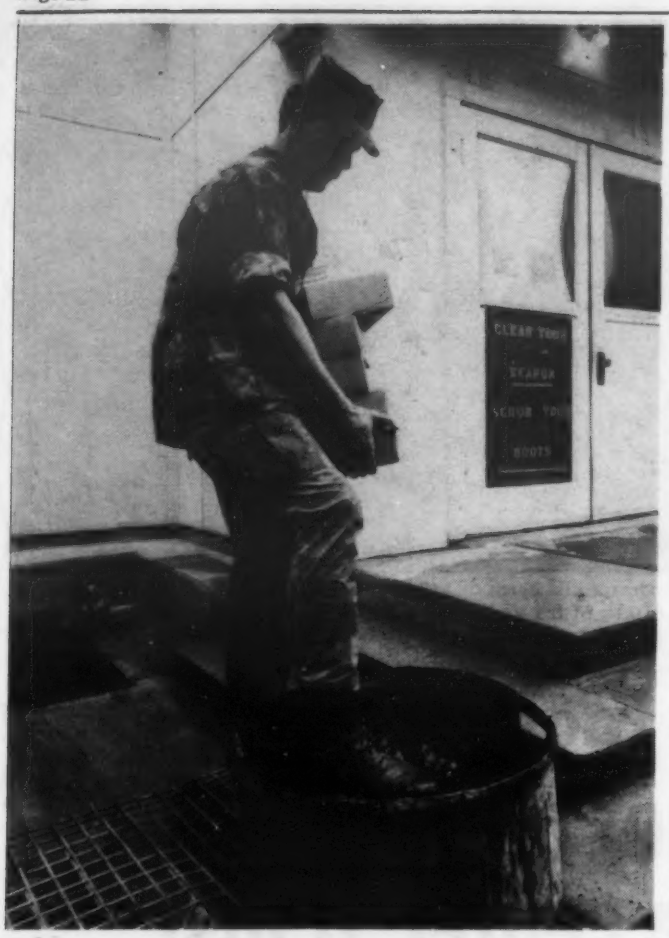
A senior programmer spots a landmark just north of Lake Pontchartrain on Tobin Aerial Survey Co.'s 120-foot-long aerial-map mosaic of the southern United States. The map was created from 7,000 aerial photographs and reproduces the entire southern tier of the U.S. from El Paso, Texas, to Florida's east coast.

"To Catch a Thief"

LOCKLAND, Ill. – The Lockland Police Department, using computers in Cincinnati and Washington, D.C., arrested a driver in a stolen car three minutes after the information was put in the computer.

Patrolman Morris, following a driver that tried to lose him, radioed the license number and a description of the car to his station. Police put it on their teletypewriter to the Regional Crime Information Center at 138 E. Court St., which in turn sent it to the National Crime Information Center in Washington, D.C., to be checked.

Within three minutes, he knew the car was stolen from Michigan.



Marine, carrying stack of punch cards, cleans his boots before entering DP room.

Corps Marines Ambidextrous: Use Guns and Computers With Equal Ease

(Continued from Page 1)

16 tapes, two 2314 disk units, two printers, and two card reader/punch units.

They also have a Farrington 30/30 OCR with one 8K module of core and two mag tape drives, one for programs and the other to collect input for the main frames. This equipment is all housed in a single computer room that is so large the operators use a bull horn to talk to one another in the far corners.

The FLC computer center runs two applications: supply and personnel. It has 14 officers and 137 enlisted men to staff the two 12-hour shifts that work seven days a week. There are no Vietnamese employees and no U.S. civilians. The only exceptions are two IBM customer engineers and one Farrington CE as well as two IBM software men. Otherwise, the Marines man their installation themselves.

The computer center is currently under the command of Lt. Col. Utley, who came from Washington, D.C. where he participated in developing the personnel system using the Farrington OCR.

Utley installed the system here, making it one of the most sophisticated personnel processing installations in the world – right in the heart of the heaviest war zone in the world.

15,000 Transactions

The OCR is used for all input documents for the personnel application, which runs on a daily cycle.

They process 15,000 transactions a day, using 57 programs that were written in the central programming office in Kansas City. They also have some 30 personnel programs written locally, for special reports and to satisfy local requirements.

Input to the supply application is still being keypunched. Supply runs every other day, with 28 programs in the regular update, plus 75 programs written for periodic reports and local requirements. The basic package was written at the Automated Services Center in Okinawa, but has been augmented locally.

There are 108,000 items of supply in the master file, each with three trailer records. They process 15,000 transactions each cycle.

Output is sent via the worldwide military Autodin network to Okinawa, Barstow, and Philadelphia for resupply action. Personnel output is also sent by Autodin, to Kansas City and to Camp Pendleton, Calif.

One partition of core is dedicated to the personnel application, three are allocated between supply and personnel as needed, and three are used for Hasp. In the three common partitions, time is allocated between production and testing. Test turnaround time is three to four hours, never longer than five. Few computer centers can offer better service than that. The men doing this work are all trained at the Computer Sciences School in Quantico, Va. Considering their one year tour of duty, it is doubtful whether they could perform adequately without exacting programming and documentation standards.

The Marines have been most directly affected by the Vietnamization and withdrawal program announced by President Nixon. Most of their functions will be turned over to the U.S. Army or to the Armed Forces of Vietnam. Just what will happen to these computer installations remains to be seen.

But whether they take the equipment with them or not, the Marines will take back solid experience proving that computer systems designed for peacetime are effective in wartime, even in the boonies where computer operators pull patrol.

In DP room, programmer uses bull horn on top of the IBM unit to communicate with others. Charlie Brown looks on benevolently.

Cause and Prevention of Microfilm Blemishes Detailed in NBS Study

WASHINGTON, D.C. – Gases evolved from paper and paper-lined storage cartons are responsible for the formation of blemishes on processed microfilm, according to a study made by the National Bureau of Standards Institute for Basic Standards (NBS).

The study, made by C.S. McCamy and C.I. Pope of the NBS, indicated that displacement of image-silver on microfilm was due to an oxidation-reduction reaction caused by peroxide and other gases. These blemishes have become known as "redox blemishes."

Results of the study indicate that several measures may be taken to prevent blemish formation. These include:

- The use of safety base permanent record film as specified in the Ansi (formerly Usasi) specifications.
- The use of no higher densities than are required for the intended purposes and the use of dark characters on a light background if possible.
- Processing machinery and film should be kept clean.
- Avoidance of scratching the film.
- Storing of films in containers made of materials such as metals or plastics of proven quality.
- Storage temperature should not exceed 70°F and humidity 40%.
- Avoidance of wide-ranging cycles of temperature and humidity.

Nasa Uses Varian Minicomputer To Buffer Satellite Information

GREENBELT, Md. – A small computer is making life easier for a large computer at Goddard Space Flight Center here which monitors the orbiting activities of the Tiros-M (Television Infrared Observation Satellite) weather satellite, launched early this year.

The Tiros-M is transmitting millions of bits of information, much of which will be processed on an IBM 360/95 computer, but a Varian 620/i minicomputer is buffering the information so that the bigger, more expensive machine gets only the information it needs.

The Tiros-M satellite is the forerunner of the new series of TOS (Tiros Operations Systems) improved spacecraft, and is a joint effort between Nasa and the Environmental Science Services Administration (Essa).

Tiros-M includes two advanced vidicon television cameras, plus automatic picture transmission cameras for sending "live" pictures to small ground stations located throughout the earth. It is an "earth-oriented" spacecraft, meaning it is continuously pointing itself at the center of the earth during orbit, and its orbit is circular at 790 nautical miles.

The data, recorded by the spacecraft for transmission back to earth via communication lines, is sent to a computer at Goddard Space Flight Center for initial processing. This data comes via two receiving stations in Fairbanks, Alaska and Wallops Island, Va.

The data recorded and processed is then turned over to Essa, which is part of the Department of Commerce, to use for whatever meteorological purposes it wishes.

With the two receiving stations in Alaska and Virginia, Nasa is able to get complete global coverage every 24 hours, so that every day the entire face of the earth has been photographed for meteorological purposes.

The telemetered data from the spacecraft, exclusive of the photograph bits, includes environmental information and all the "housekeeping" data necessary for monitoring the complete flight. This information is simultaneously tape recorded and fed directly into the Varian 620/i minicomputer, which has a 16K core memory.

The functions of the 620/i are to reduce the spacecraft data in realtime and to "format" the attitude data for processing by the larger IBM computer by means of presenting a digital tape to it.

If Nasa were to have provided the same type of support and put the telemetered data directly into the larger computer, the agency reported, the extremely fast IBM machine would have to waste a lot of time sifting through many bits of data that are useless to it.

Since seconds are eternities to computers, the machine without the Varian 620/i would have to sit and hum until it received a significant piece of data to process. And even then, processing it would take only several nanoseconds, after which it would have to sit and wait for another bit to enter it.

Because computer time is extremely expensive, these seconds and fractions of seconds of what could be called "downtime" can represent a significant waste of money.

Hence, the minicomputer was selected in order to feed the IBM machine only data that is important to it, thereby increasing the performance time-for-cost economy factor. The IBM machine processes every bit of information it gets from the Varian computer.

Technician programs the Varian 620/i minicomputer preparatory to testing the data handling procedure that will start when the Tiros-M weather satellite, in the foreground, is orbited.

Technician identifies a tapeful of digital data from a Varian 620/i minicomputer.

More than 50 CRT terminals installed in Honolulu provide Hawaiian Airline personnel with instant reservation and flight information.

Data Base in Texas

CRT Terminals Expedite Reservations in Hawaii

NASHUA, N.H. – A passenger reservation terminal system featuring a network of more than 50 high-speed CRT display terminals has been installed in Hawaii by Sanders Associates, Inc.

The display terminals, in the reservation offices and ticket counters of the airline, will depict information on television-like screens within seconds after requests are initiated via the terminal keyboards.

The Hawaiian reservation network utilizes a central data base in Dallas, Texas, where required flight/reservation information is stored.

The display terminals will provide Hawaiian reservation agents with keyboard access to all information needed to answer passengers' inquiries regarding flight schedules, fare, seat availability, and other data for all Hawaiian airline (HAL) flights.

Hawaiian agents will also have access to mainland airlines information through the central data base in Dallas where HAL data is stored as part of Braniff's Cowboy reservation system.

"Cowboy," as part of its system, utilizes some 250 high-speed CRT terminals which are coupled to the central data base via communications processors.

The HAL high-speed reservation terminals are self-contained units featuring input, output, editing, memory, character generation, power supply, and other circuitry all housed in a single unit.

Each terminal is equipped with a keyboard that permits operators to retrieve, update, edit, and enter information into the computers.

The display network will feature terminal-to-terminal as well as terminal-to-computer communications.

Computer Provides Flight Plan Service For Private Planes

PORTLAND, Ore. – The use of computers to plan flights has given private pilots sophisticated equipment previously reserved for airline companies and the military.

Fourteen airports in Oregon are benefiting from the computer terminals installed recently by Flight Plan, Inc. to assist the weekend pilot and the flying businessman.

The terminals are tied in to an RCA Spectra 70 computer in Dallas, Texas. The computer communicates with every airport in the U.S. which has 1,000 takeoffs and landings each year – virtually every airport in the country.

The computer automatically selects for the user the most direct route from the maze of airways that span the country.

A flight plan is printed out for the route in less than a minute – a small fraction of the time formerly required for the computation.

The plan includes headings on each leg of the journey, distances, ground speeds, winds aloft, radio frequencies, estimated times, current weather conditions, and a terminal forecast for the destination.

The flight plan service costs $3 for a visual flight rules (VFR) plan and $5 for an instrument flight rules (IFR) plan. The resultant savings in flying time and fuel, however, negates the cost of the service, according to the company.

The service is essentially the same as that used by the commercial airlines, the company said. It contains many more airports and air routes.

The system can handle three flight plans every second. The company expects that more than 2,000 terminals will be installed within a year.

Computerized 'World Simulation' Gains

LA JOLLA, Calif. – The proposal for a computerized simulation of the world is slowly gaining momentum, according to John MacLeod, who originated the idea as a possible means of providing a solution to many of the world's most pressing problems [CW, Sept. 24, 1970].

MacLeod's plan envisions the coordination of existing simulations, such as those of urban planners, ecologists, economists, political scientists, and engineers. The examination of the interaction between these and other simulations as yet unavailable would eventually provide a computerized world simulation.

As a result of a World Simulation Workshop in Las Vegas last November at the time of the FJCC, it was decided that work toward a world simulation would be carried out for the time being by a task force of the Problems Committee, Simulation Councils Inc., with MacLeod as task force manager pro tem.

As soon as possible, a board of trustees will be elected and officers appointed to form a corporate-like nonprofit organization.

Trustees, currently being nominated, will:

- Codify the overall objectives of a world simulation.
- Determine policy.
- Elect officers.
- Act as trustees of the public interest and of any funds entrusted to the organization.

Nominees will be elected by a mail ballot of all who have expressed an interest in world simulation. Their names will be announced at the Second World Simulation Workshop, to be held during the 1970 SJCC.

Like the first workshop, attendance at the second will be by invitation only. However, those wishing to become involved will receive invitations if they write and explain why they are concerned, and give some information as to their background and current areas of activity, MacLeod said.

Since the first workshop more than 150 interested parties have been contacted, and a survey indicates that about 25 simulations of interest that would be related to world simulation are available, MacLeod stated.

These include the sophisticated simulation of the State of California which will ultimately result in a "model of a society." A team of multidisciplinary experts is presently designing a model into which are being fed mathematical expressions for every conceivable problem concerning California.

This data in turn, will be programmed into a computerized analytical system which will show the interrelationships of each problem.

The California model, MacLeod explained, would be a mini-model of the proposed world simulation.

The American Society for Cybernetics has offered both computer and secretarial time to the project, MacLeod said. In addition, MacLeod has been offered the use of both Univac and GE computers, he said.

Persons interested in taking part in the World Simulation Workshop at the SJCC, or who would other wise like to offer their assistance on the project, can contact MacLeod at Simulation Councils, Inc., P.O. Box 2228, La Jolla, Calif. 92037.

Brevard County's computer is used for criminal law enforcement by the sheriff's office.

New Law Enforcement Puts Computers And Criminals on a Collision Course

BREVARD COUNTY, Fla. – Computers and criminals are on a collision course charted by a new computer in the form of daily crime density maps, detailed daily crime analyses, and other information of value to command and patrol personnel.

"Law enforcement must modernize to take advantage of computers," declared Sheriff Leigh S. Wilson. "Certainly, the criminal makes use of every modern tool at his disposal.

Wilson installed one of the first NCR Century 100 computers in criminal law enforcement in the U.S., in May, 1969.

One of the features provided is the daily crime density map, which flows right off the computer printer, dividing Brevard County into 38 zones, each about 36 miles square. Within each zone, the total number of crimes is listed on the map. The map also lists a "Zone 50" which represents the Cape Kennedy Space Flight Center and Nasa installation. However, the sheriff's office does not normally patrol this zone.

A multipage print-out supports the map. It breaks down crimes into 37 classifications, and lists the number of crimes of each type that occurred in each zone by four-hour time segments.

At the end of this report, the computer totals crimes, by each classification, and overall, by time period, for the entire county. The map and report are created from data keypunched and fed into the computer to automate production of the daily radio log.

Working from the crime map, DP manager Larry K. Higinbotham and David P. Plowden, director of the office's bureau of information, have divided each zone into one-mile-square areas.

These enable command officers to pinpoint the incidence of crime to a single square mile and shift their resources accordingly. If patrol cars are visible when and where crimes are likely to occur, the potential criminal may get discouraged.

Detailed monthly vehicle cost analyses are also produced by the system. These cover gas, oil, tires, repairs, etc. If the total cost of operating a patrol car rises above three cents a mile, the vehicle is pulled-out of service and checked. This also establishes tight control on gasoline usage, relating gas purchases to mileage.

Also on the computer are monthly crime reporting for the FBI; reports on civil actions, such as serving papers, picking up license plates, etc., including the action involved and any money collected; data on stolen property and serialized stolen property; recovered property reports; deputies' activity reports, based on data from cards filled in by the men and keypunched; and a monthly case "inventory" listing case status information.

Data Bank on Criminals

Soon to be put on the system is data on known criminals, including their records, specialties, associates or arrest – both those on the outside and in jail, and modus operandi. Also about to be automated is the department's 203-employee payroll.

Brevard County Sheriff Wilson and DP manager Higinbotham discuss crime map taken from the printer, which indicates total crimes for the day in each zone.

Computerized Business Systems Called Futile, Slovenly

By Peter A. Carr
CW Staff Writer

TORONTO, Canada – The quality of systems developed over the last decade has been far from adequate, according to a Canadian computer consultant.

Dr. Harvey Gellman, president of DCF Systems, Ltd., said in a speech here that there are several signs that prove that many of today's systems are failures.

The inability of computerized customer billing systems to correct simple mistakes is only one of the examples of slovenly, fruitless, and irritating systems, he said.

Such a state of affairs is unacceptable and inexcusable, Gellman said.

Another symptom of ineffective systems is that many company presidents have lost patience with their systems departments. Reasons for this dissatisfaction involve the large amounts of money spent on computers and systems, inability to meet schedules because of staff resignations, inability to estimate the amount of time necessary for a job, and complaints from people who use the computer service, he said.

Grandiose Terms

"Systems people have been talking in grandiose terms about using the systems approach to improve the quality of our lives. They talk about using computers for urban planning, to help control pollution and improve the environment, and to fight the war on poverty," he said.

"In my opinion, this talk is meaningless until we improve the quality of systems work. If we cannot handle physical systems, how can we hope to handle social systems which are much more complex?" he said.

Gellman said that the blame for this state of affairs rested with everybody, from senior systems managers to computer operators and keypunch operators.

"It seems that excellence has gone out of style. Today's society does not seem to believe that it is worth doing an excellent job for the sake of excellence alone," he said.

Senior managers of organizations must accept responsibility for most of the system failures encountered in the sixties, Gellman stated. Their main failure was in setting objectives.

"In many cases, companies have not established specific objectives for the entire organization. If you do not set objectives, you stand little chance of reaching your goal," he said.

"Senior managers usually do not get involved until they notice that it is costing them a lot of money and is not producing much except a lot of complaints from people who use the results of the system," he said.

At present, hardware accounts for less than half the total costs of computer systems. In the near future, hardware will account for no more than 20% of the total cost. But the difference in the quality of results is directly related to the quality of the people, not the equipment, he said.

Effective Systems

"To develop effective systems, it is essential to establish specific objectives for the company as a whole and for each of its parts. If this is not done, the company will waste its people, its time, and its money. The objectives must be defined clearly in a way that enables the manager to measure how well he is doing in meeting his objectives," Gellman said.

"If we avoid the errors we have made in the sixties, we can develop more effective systems for the seventies," he continued.

"If we focus on improving the quality of our systems, if we aim at excellence for the sake of excellence alone, we will not be as disappointed in 1980 as we are today. We might even have made a start in developing effective social systems that can improve the quality of our lives," he said.

Computer, A Little More Dolce, Please

NEW YORK – You've undoubtedly heard of the Moog, which synthesizes electrical impulses into audio output or, in lay terms, makes electrical sounds.

Before that, there were electrified instruments, and before that, amplified instruments.

Another step (ahead?) was taken here recently, in a concert at the Guggenheim Museum, during which a computer was one-third of the "orchestra."

The Sonic Arts Union presented the affair, whose main work was entitled "Conspiracy 8."

Besides a crosscut saw and an organ, amplified sounds of a computer at work at the Massachusetts Institute of Technology were used in the composition.

Steve Smoliar, a graduate student at MIT, was the narrator-conductor. He would type out questions to the computer, which was connected by telephone lines to the concert hall.

The computer's answers were read aloud by Smoliar, and another member of the Sonic Arts Union would modulate the actual sounds of "bit changing state in the computer," Smoliar said.

The modulated sounds were then transmitted over loudspeakers.

Smoliar has been interested in the computer's use in the arts for some time. Last year, he wrote an article on computerized theater for *Computerworld*.

New York papers treated the cybernetic suite indifferently.

Cost Data Unified for Maintenance

SEATTLE, Wash. – All six of Washington's state colleges and universities have begun analyzing the costs of building maintenance for a four-year period with a computer system developed at Eastern Washington State College.

The system figures the costs on the basis of square feet of buildings, calculates replacement costs, and includes such factors as adjustments for when buildings are not in use.

ESE Speeds Research System

ROCKVILLE CENTRE, N.Y. – The Electronic Stock Evaluation Corp. uses computers to perform tasks commonly done by individual research analysts. The computer enables ESE to analyze about 2,500 securities each week.

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User Says 'Score-III' Can Outperform Cobol by 6-1

NEW YORK – The result of a test conducted by Anchor Hocking Corp. has shown that Score-III, an expanded version of the Score Cobol generator, can have a performance ratio of 6-to-1 over Cobol programming.

According to the developer, Programming Methods Inc. (PMI), Score-III is a major extension of the file management capabilities of earlier Score versions. New capabilities are said to include an extension of multiple-file processing, entry points for users to incorporate their own coding, and a wide variety of new retrieval and formatting options.

A spokesman said the test was based on four actual program requests from the firm's work backlog. Each of these requests was coded in RPG, Cobol, and Score; keypunched; compiled; and tested until valid results were obtained.

According to the Anchor Hocking analysis, Score-III saved time in every area of effort, as well as in the overall total hours.

In order to eliminate as many variables as possible, Anchor Hocking used only one programmer and one keypunch operator, both of whom were well-versed with RPG and Cobol. The company said that the programs were not complex in their logic requirements but were essentially report generation projects. It used a 360/40 with 60K memory.

	RPG	Cobol	Score-III
Programming	11.8	22.8	4.0
Keypunching	4.1	7.3	.5
Computer Time	1.9	1.7	1.0
Total Hours	17.8	31.8	5.5

Anchor Hocking Test Results

In discussing the findings, a spokesman for Anchor Hocking emphasized that they were the results of only one test, and on that basis, he would not say that Score-III would always show as great an advantage over conventional Cobol.

In addition to a new version applicable to the 7040/44 and 7090/94 using Ibsys, Score is already operational on S/360 under DOS or OS, RCA Spectra 70, the Honeywell 200 series, Univac 1108, and Burroughs 5500.

In its most recent version, Score costs $12,500.

PMI is at 51 Madison Ave., New York. Score also is marketed by Atlantic Software, 5th and Chestnut, Philadelphia.

CSC Combines Three Software Packages For S/360 Users at 20% Reduction

LOS ANGELES – Three packages, geared to the needs of personnel departments having access to 360s, are available from Computer Sciences Corp. (CSC). The Personnel Management Information system (PMI), Payroll, and Edit Report Generator (EPG-II) can be used either singly or in combination, the developer said.

CSC said that PMI can provide up to 26 reports in four areas: employee records, compensation, benefits, and manpower. Typical output includes equal opportunity reporting, pay rate by job classifications, seniority and anniversary lists, and turnover and separation analyses, according to the company. A spokesman explained that the English-style language used by PMI gives personnel departments the ability to initiate additional reports themselves without burdening a programming group.

CSC's payroll system is said to cope with the normal range of payroll problems. Labor distribution, an optional feature, allocates costs in hours, dollars, or units, and can be used to prepare up to eight reports for various cost centers and varying time periods.

Originally intended to check the accuracy of incoming PMI and payroll data, EPG-II can be altered easily to prepare front-end edit runs for other user applications. CSC said that the use of simple mnemonics "dramatically reduce" the time required to prepare a new edit program with EPG-II.

The package is said to include parameters for testing up to 60 different conditions, from blanks in a required field through high and low limits. Edited data can be reformatted to suit subsequent programs, according to the company.

The PMI and payroll programs are written in Cobol; the EPG-II, in Assembler. The packages are operational on an IBM 360/30 and larger, with minimum 64K under DOS or 128K available core under OS.

The three packages are available for a combiniation purchase price of $35,000, including the labor distribution option in the payroll system. Without the option, the company said, the combined price is $30,000.

By itself, the PMI system is priced at $18,500. The full payroll package costs $20,000; with the labor distribution left out, the cost is $12,000. EPG-II, separately priced, is $6,000.

Computer Sciences is in Century City.

'Yardstick' Projections Simulate Expenses of Time-Sharing System

HOUSTON – Yardstick, a program that simulates and projects the income, expense, and economics of a time-sharing system, is being offered by Hub S. Raliff, computer systems consultant.

Yardstick, written in Basic for the Digital Equipment Corp. PDP-10, is designed to provide investors, potential investors, managers of time-sharing centers with projections of the profitability of the time-sharing computer enterprise.

Based on estimated or actual figures, a 48-month projection of cash flow for the center is generated. This data includes projection of sales per user, sales and equipment loading for the center, and the income from aged accounts receivables. The projection of expenses by month may also be printed.

Yardstick is available immediately and sells for $25,000. The price includes source program listings, complete documentation, and the tailoring of the system to the individual customer.

The program occupies about 65K words of computer core. A version exists in Fortran IV.

Hub S. Ratliff is at 3600 W. Alabama.

"Watch out Smarty – or I'll Declare you Obsolete.

'Gras' Monitors Alert Levels to Lower Airline Component Parts Failure Rate

SYOSSET, N.Y. – A system for airline component monitoring and analysis is available from Aero Data, Inc. (ADI).

The Graphical Reliability Analysis System (Gras) analyzes aircraft component data in two ways. First, the unscheduled removal rate for parts is monitored as a function of time for specific component types, establishing an alert level as a performance yardstick.

Secondly, actuarial data is monitored by the computer for common characteristics. Warnings are issued and plots produced when infant mortality or wear-out characteristics are detected, the company said.

Components exhibiting a decreasing failure rate or a constant failure rate with age are classified as candidates for time limit extensions.

"Gras provides a responsive system for identifying troublesome components and a systematic procedure for defining an overhaul time or requesting and justifying time limit extensions," said Sol Tenenbaum, ADI executive vice-president.

Computer output, in both hard copy and microfilm forms, is represented graphically. Gras has about 80 subroutines.

When used as a service, Gras is processed on a 360/65. The user receives graphs and printouts. Minimum monthly charge for 50 components is $1,100, plus $2 per additional component. For actuarial plotting only, the minimum monthly charge is $550 for 100 components, plus $1.50 per additional component.

Purchase price of the system is $55,000, which includes installation, documentation, and maintenance for one year.

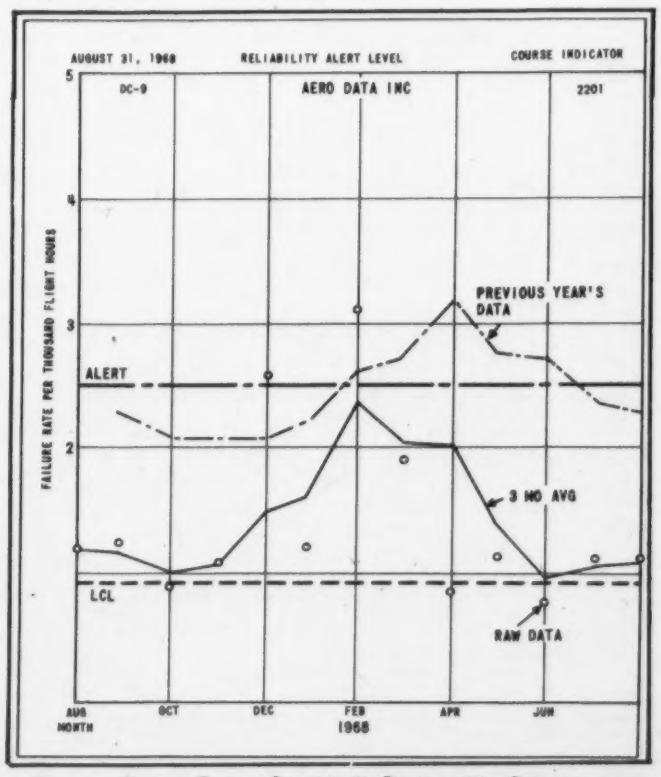
Gras runs on System 360s Models 40 and up, and requires 200K of core memory. The programs are written in Fortran, and the plotting package is in machine language and Fortran.

The system can be in operation in six weeks, a company spokesman said.

ADI also developed a maintenance control system applicable to all levels of commercial airlines and general aviation. The system reportedly provides a means for controlling, scheduling, and forecasting maintenance work for aircraft and rotables (repairable components), as well as providing an inventory control system.

The program produces output only when there is a significant trend toward the alert value or when alert exceedance occurs. For references purposes, actuarial data is presented by the system when there is a component alert.

Aero Data, Inc. is at 175 Jericho Tpk.



Sample Report Graphically Produced by Gras

The Greatest Shows On Earth

Introducing Delta Data Systems' TelTerm. The only video terminal that can display over 100 lines of data on the screen.

TelTerm is a totally new concept in remote computing. Its storage and display capability of over 100 lines of data puts it a giant step ahead of all other video terminals. No video display on the market can show as much data. Because no video display has the up and down *paging* feature, exclusive with TelTerm.

And 80 characters per line on 27 lines. Formatting that allows fixed and variable data fields. A blink feature that flashes data on the screen twice per second. Data transmission speeds to 9600 baud asynchronous, 4 million bits per second synchronous. A memory capacity of 2500 characters. Plus a separate numeric pad on the keyboard.

And all that capability is yours in three TelTerm models. All are desk top units with keyboard, display, and control electronics in one package. And they're designed for applications like time-sharing, reservation systems, communications and information systems, inventory control, process control. Each TelTerm model has its own special capability and an unbeatable price, like

TelTerm 1. $3,000. Our Teletype Replacer. That rings a bell when the 64th character on a line is entered. TelTerm's low price and high speed for receiving and displaying information puts it generations ahead of teletype.

TelTerm 2. $3,500. Our Block Mode Transfer Display. Has an editing feature that inserts and deletes lines and characters. Conversation mode. An adjustable margin with bell and 5 tab positions. And transmission can take place on a message or page basis.

TelTerm 3. $4,500. Our IBM 2265 Replacer. The feature presentation that brings the curtain down on the IBM 2265. Besides having all the characteristics of TelTerm 2, TelTerm 3 is completely IBM 2265 compatible.

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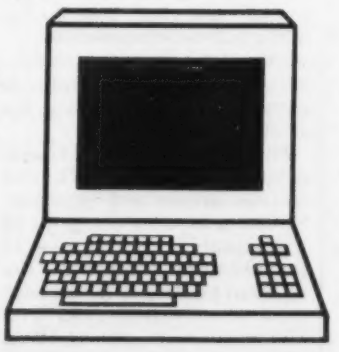

Delta Data Systems Corp.,
Woodhaven Industrial Park,
Cornwells Heights, Pa. 19020
(215) 639-9400

Delta Data Systems

Property Analysis Service Aids Investment Counselors

DETROIT – A property investment analysis service is being used by about 430 real estate brokers throughout the United States as an aid in client consultation and buying.

The Realtron Corp. has been offering the service since late 1969 through the Realtors Computers Service, Inc., a subsidiary of the National Association of Real Estate Boards.

A three-step plan of investment property retrieval involving input, retrieval and analysis, and an investment analysis comprise the service.

In the first step – retrieval property input – the IBM 360/40 at the Detroit center is fed property listing information which is then stored in data banks until retrieved on inquiry. Presently, there are approximately 9,000 listings on-line with the computer, said a Realtron spokesman.

In step two – investment retrieval – the computer runs through several thousand listings, all previously sorted, filed, and committed to its memory bank and then retrieves the investment property information which meets a client's requirements. These retrievals are based on the price range and specifications set by a particular client.

Once a possible property choice has been made, a Realtor can immediately run an investment retrieval analysis on the selection. This is the third step.

To do this, a Realter reinserts the information in the form of an inquiry for an on-the-spot analysis. Within seconds, Realtron claimed, the computer sends a response in the form of a comprehensive investment guide on the property in question.

This report reveals updated statistics on the property and details a long-range forecast on the expected activity of the property for up to 10 years, based upon a client's financial situation.

Each report gives 18 specific details which include capitalization rate, equity, income tax, interest payments, taxable income, spendable income, depreciation, and operating costs.

Investment Analysis

The other part of the service – investment analysis – allows a broker or investment counselor to research the value of his clients' present holdings. This analysis allows a client to see the projected figures on expenses and income in advance, so that he can determine how investment properties can bring in the greatest returns for him.

Investment analysis provides a client, before purchase of property, the income and tax consequences associated with a piece of property over a 10-year period.

The investment retrieval and analysis service can be programmed on either audio response units or teletypewriters which are available from Realtron.

Within a few months the service will be available in Canada.

The charge to firms for the basic service is $52/mo which covers computer time and Watts line (from 8:30 am to 10 pm EST). Equipment fees are $79/mo for the teletypewriter or $15/mo for the audio response unit. Delivery is 30 days for the teletypewriter and immediate for the audio response unit.

Realtron Corp. is at 24065 Five Mile Road.

Personal (left) or Printing (right) Terminals used by Realtors to obtain information.

Drafting Package Cuts Plot Time

BELLAIRE, Texas – The Houston Instrument Division of Bausch & Lomb has developed two software packages for use on digital incremental plotting systems.

Written in Fortran IV, the Utility Drafting package offers the use of routines necessary for the programming of any drafting application, the company said. Houston Instrument estimates that as much as one half the normal programming time can be saved with the use of the Utility Drafting package.

The General Graphics package is used in conjunction with Utility Drafting for general plotting purposes.

Both these packages are immediately available from Houston Instrument. The Utility Drafting package has a one-time lease charge of $200 for a three-year lease, and the General Graphics package has a one-time lease charge of $150 for a three-year lease. If both packages are purchased together, the charge is $320.

Houston Instrument is at 4950 Terminal Ave.

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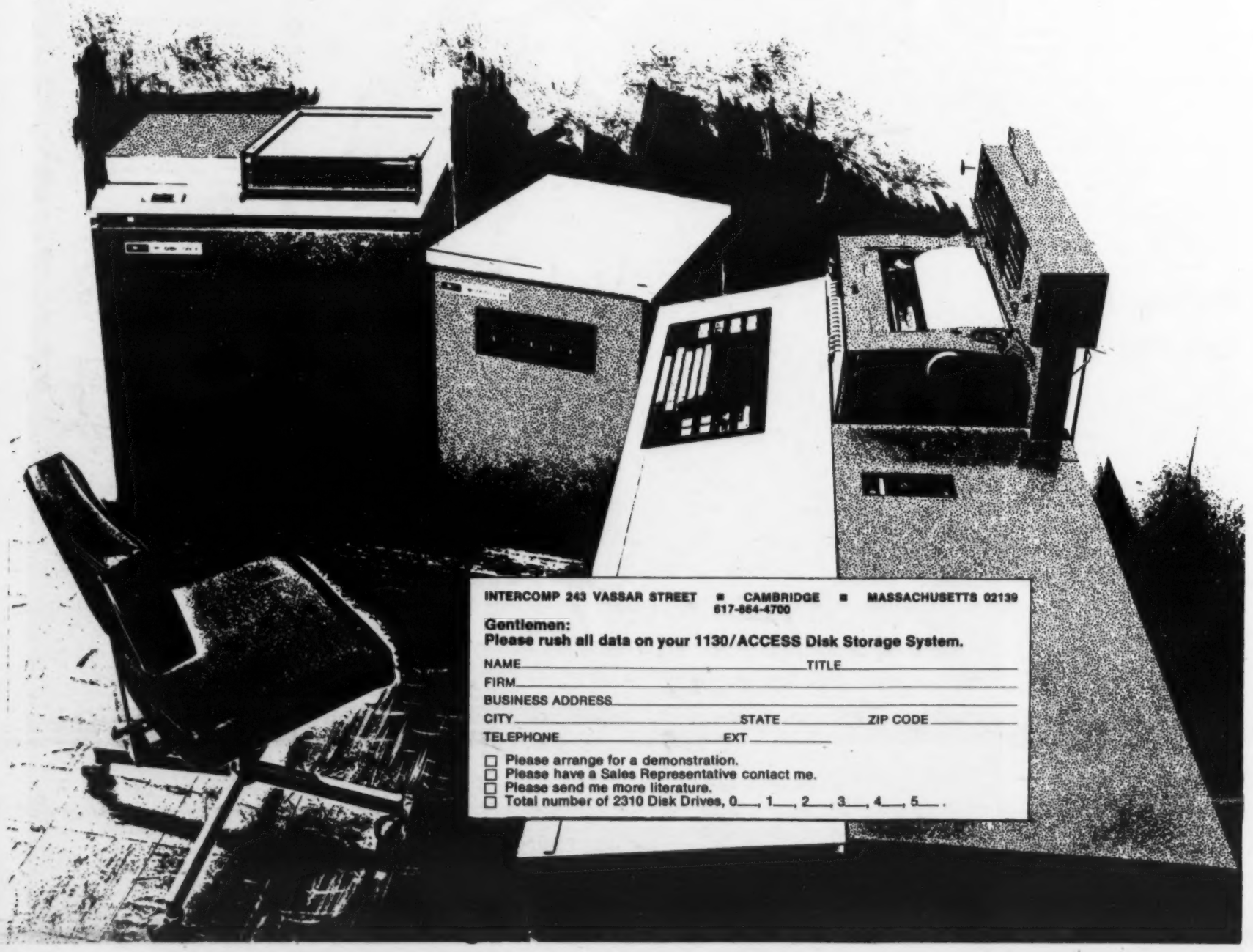

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'Coach' Simplifies Programming for Classroom Usage

WASHINGTON, D.C. – With Coach, a computer-assisted instruction (CAI) language from Applied Simulations International (ASI), teachers can program their own lessons on systems with a minimum of 8K storage.

Coach is said to be essentially a set of instructions which can be learned in a few hours. To program a lesson into Coach, the teacher need only know 15 words, such as Message, Question, and Answer. With these, lessons can include sets of sequential instructions, call for single or multiple-choice answers, or offer multiple-choice or true-false responses.

Under Coach, lessons and parts of lessons can be repeated for emphasis. Applied Simulations said that entire lessons are stored in a library for subsequent student use.

The package contains a dictionary, according to the company, through which a teacher can build definitions into a lesson. If a student does not understand a word or phrase, he can ask Coach for clarification.

Coach also includes several features which the developer said are limited to CAI languages with much larger storage requirements:

- Keyword selection, in which the teacher may look for key words in the student's response by scanning for specific words.
- Selector opinion, in which only certain letters or characters are checked in the response, thus allowing for slight misspellings.
- Counter capability, through which tallies of right and wrong answers are kept for student evaluation.

Any system that supports both Assembler and Fortran can be used by Coach; the source decks utilize both these languages. A special version of Coach has been developed for the 1130, an ASI source noted.

Purchase price for the basic Coach package is $10,000.

Applied Simulations International is at 1100 17th Street, N.W.

Three-Module Package Reduces I/O Jobs

SACRAMENTO, Calif. – Proctor, a system of project control, is now available through Rodger, Rogers, and Kirkman in three separate modules: time, cost, and scheduling.

The system was developed to give realistic project control without overburdening the user with complicated input and output documents.

Proctor Module I, time, builds a data base for the cost and scheduling modules. The time module also produces comprehensive project control reports showing effort expended on the project; projected variances and expected completion dates; individual and team productivity; and summaries for all the projects being monitored.

The cost and scheduling modules of Proctor produce additional reports illustrating expenditures and projected variances in comparison with the budgeted amount, and staffing charts based upon the projections as computed in Module I. Module I must be operational before the cost of scheduling Module can be installed.

Proctor is written in Cobol, and will operate on any manufacturer's hardware that supports Cobol. The system utilizes 16K bytes, three data files, and a printer.

The cost of the Module I is $3,500; the Module II is $2,500; and the Module III is $3,500. The price includes a six-month system support, installation, training, and documentation.

The Module I is on a 30-day delivery schedule.

Rodger, Rogers, and Kirkman is at 2110 K St.

N.H. Liquor System Quickens Distribution

CONCORD, N.H. – New Hampshire's 55 state-owned liquor stores have begun to use an inventory control system developed for the state Liquor Control Commission by Data Management Services (DMS).

With no serious problems reported to date, DMS said that the new system could be equally applicable to other state-controlled or private liquor distributors. Minor changes could also make it useful in any situation requiring prompt, detailed inventory control, DMS said.

Software/ Services

The state Liquor Control Commission expects the new system to give it better control of cash receipts, automatic financial and inventory recording from a central warehouse, and surveillance of orders by licensed bars and restaurants. In addition, there are provisions for frequent inventory and sales reports and a follow-up on outstanding claims against shippers. Both the commission and the developer stress the fact that the system is open-ended and new needs can be met quickly and easily.

Paper tapes punched at the cash registers in local stores are presently being mailed to Concord daily, for transcription to magnetic tapes before entering the computer. By fall, spokesmen at the Liquor Commission expect to have data communication lines so that the transcription can go directly from paper tape in the stores to mag tape at the computer center.

Written in Cobol and presently operational on the State Highway Department's RCA Spectra 70/45, the package is tape-oriented except for an optional price file feature which is disk-resident.

DMS said that the system could operate without recompilation on an IBM 360/40 and up, with a minimum 64K storage.

Cost of the system "as is" is $15,000, according to DMS. Modifications to adapt the system to other user's needs or to other hardware are available at additional cost.

The Implementation Division of DMS is at 1845 Walnut St., Philadelphia.

(left) Ray Work, President of NCI.
(right) Edwin D. Witter, Jr., Vice President of Continental Telephone Corporation.

NCI j
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WHO IS CONTINENTAL TELEPHONE

We think of data processing companies as being spectacular performers. Yet there are very few that can match the performance of Continental Telephone.

In nine years it has grown to become the third largest independent telephone company in the nation. Assets of over $1 billion. More than 14,000 employees. Providing service to 1.5 million telephones in 42 states, Canada and five Caribbean nations. Revenues and sales last year of over $290 million with a net profit of $31.4 million. And capital of over $300 million.

Continental is a dramatically successful company oriented towards aggressive growth through internal development and acquisitions. A New York Stock Exchange listed company that has earned the respect of the financial community.

Diversification into closely related fields is not new to Continental. It already owns a major and highly successful manufacturing subsidiary, Community Antenna Television (CATV) systems in 13 states, and a directory publishing company. Its facilities were used for the live television coverage of man's first walk on the moon. And it provides an increasing array of business and scientific information through computerized data services.

Although the majority of present revenues is from telephone operating companies, Continental is much more than a telephone company. It is a total communications company. And the trend now and in the future is towards further growth in this broad and exciting total communications spectrum.

WHY IS CONTINENTAL TELEPHONE IN THE DATA SERVICES BUSINESS

It makes good sense. At Continental, the interrelationship of communications and data services is so close that it is difficult to tell where one ends and the other starts. And Continental is in a perfect position to capitalize on that fact. Using the same management vigor and imagination in both areas.

Continental is *not* a novice at data processing. Quite on the contrary. It is a significant user with over 450 people employed in in-house activities on an integrated, profit-center basis.

Continental knows from first-hand experience that there is an immense market in data services. In providing products that solve the user's needs in the best possible way, and at the lowest possible cost. In helping the user make better use of his resources. In solving user problems in new and imaginative ways. And in providing wide ranges of services from experts located conveniently in the user's immediate area.

However, there is a sharp difference between running a smooth in-house data services activity, and offering a wide range of services to users. For this reason, Continental is not combining the two elements at the outset.

And that's where NCI enters the picture.

Continental was well aware of the fact that the road is littered with those who did not move forward in an orderly and intelligently specialized way. So Continental very carefully began the systematic examination of opportunities and companies. Over 100 data services companies were examined. And from them, NCI was selected.

WHY NCI

NCI is a perfect fit for Continental. For two reasons.

It has WORK TEN and RSVP, two fine products which strike at the heart of the major problems facing all users: shortage of competent programmers, the long lead time and high cost of implementing data

joins
inental Telephone in a
that promises to
a far-reaching impact
portant segments of the
processing industry.

processing systems, and the difficulty in obtaining selected information for executives on short notice.

Secondly, NCI has a strong national marketing and system support organization through which any number of problem-solving products can be brought to you.

The other side of the coin is equally as interesting. Continental is also a perfect match for NCI. Continental has financial resources. In-depth management and personnel resources. Ability to obtain additional products that NCI can market and service. And a full-line of data services presently in existence within another Continental Telephone data processing subsidiary.

A LOOK AT THE FUTURE

The total data services activities of Continental will be very much in the news in the coming months as they bring a succession of problem-solving, cost-reducing products to you. As many of these services and products as possible will reach you through NCI.

NCI will continue as a highly autonomous company within the Continental Telephone group of companies. This is customary among Continental's non-telephone affiliates. You will continue to see the familiar NCI name frequently.

In an industry of often great instability, NCI is a rarity. Stable. Well-financed. Dependable. Able to stand behind its products and give you the service you want and need.

A SUGGESTION

We have come to you with this report because we think you have a right to know who we are and what is going on. If you would like more information about Continental Telephone, just drop us a note. We would be pleased to send you a copy of the latest Continental annual report.

Meanwhile, if you know of any companies or individuals who would like to investigate opportunities with NCI or other Continental affiliates, call or write E. D. Witter, Vice Pres., Continental Telephone Corporation, 222 S. Central, Clayton, Mo. 63105. Telephone (314) 862-3500.

NCI

NATIONAL COMPUTING INDUSTRIES
3003 NORTH CENTRAL AVENUE
PHOENIX, ARIZONA 85012
TELEPHONE 602: 264-1394

Why pay more for Graham tape?

Because the end justifies the means.

Several years ago, we set out to build the finest tape in the computer industry.

It wasn't easy. But we did it.

We built the world's first Zero Defects tape.

We built the world's first million-pass tape — tape that exceeds one million passes on CDC 680 certifiers, with no permanent errors.

It costs a little more to make a tape like this. But we think it's worth it.

After all, how much did it cost to gather your data? Or write your programs?

How much does your computer time cost? And how much depends on successful completion of your data processing operations?

Can you afford to use any tape but Graham?

GRAHAM MAGNETICS

means to an end.

Graham, Texas 76046 WATS Phone 800-433-2701 Texas Phone 817-549-3211

Portable Unit Uses MT/ST Tape Transmits via Acoustic Coupler

Heurecorder M600

WESTWOOD, N.J. – A portable digital data recorder for collecting numeric data on a magnetic tape cartridge on-site, and communicating it to a central point over telephone lines has been developed by Heuristic Concepts, Inc.

Called the Heurecorder M600, the battery-powered recorder features a telephone modem, rechargeable batteries, and an IBM MT/ST cartridge for magnetic tape storage.

The MT/ST tape can be read into any IBM 360 through the use of an IBM 2495 tape cartridge reader, the company said.

The Heurecorder consists of a recorder unit designed to be carried on a shoulder strap, and a keyboard handset, with a Touch-Tone-type pad attached by cable to the recorder.

Attachable to the side of the recorder is an acoustic coupler-equipped modem which permits transmission of data recorded on tape to any terminal capable of accepting Usascii code over telephone lines.

A six-character Nixie tube, a digital display device, is used to display data as it is being entered or verified. A series of 22 different visual and audible signals are used to indicate error conditions for operator corrections.

The keyboard unit, weighing about eight ounces, is equipped with numeric keys zero through nine, and a word mark. The data space key inserts spaces between characters and the backspace key allows corrections and re-entry of one or more characters stored in the 23-character buffer. The buffer may be cleared by using the clear key.

The End-of-Word button signals to the recorder to write the contents of the buffer onto tape, and the End of Tape key is used to indicate the end of a transmission.

A Request-to-Talk button may be depressed anytime during transmission of data for audio communication between operator and receiver.

The recorder, which weighs about twelve pounds, has a capacity of 23K characters of MT/ST code on the tape. Fixed and variable length record formats up to 24 characters long can be used. An AC adapter is optionally available.

The recorder is equipped with controls for the tape unit that include: read mode, write mode, load, unload, rewind, field control, word length control, and a power switch.

Among the applications outlined by the manufacturer for the unit are recording of utility company meter readings; supermarket merchandise inventory and inventory replacement; acquisition of inventory data in warehouses and open yards; surveys and poll taking or any other data collection activity requiring operator mobility.

CW learned that additional entry devices for the Heurecorder will be shortly announced by Heuristics. These will include a Kimball ticket reader and an 80-column card reader.

The Heurecorder M600 has been priced at $2,350, complete with modem. The unit is slated to go into production in August 1970.

Heuristic Concepts is at 115 Woodland Ave.

Asynchronous Multiplexer Concentrates 64-Terminal Data on 2,400 Bit/Sec Line

GLEN ROCK, N.J. – A low-cost communications multiplexer featuring asynchronous multiplexing has been developed by Dynelec Systems Corp. The unit reportedly can concentrate data from two to 64 remote low-speed asynchronous terminals over a single, 2,400-bit/sec, voice-grade line.

The Dynecom 70W 22 channel unit is equipped with a high-speed line controller which permits expansion up to 64 terminals of mixed data speeds and codes, according to the company.

The device is said to be able to automatically intermix and simultaneously operate each low-speed circuit at four different clocking speeds in the 45.5-to 300-bit/sec range.

It can operate with dedicated or dial-up terminals, having code lengths from 7.5 to 11 bytes, the company said.

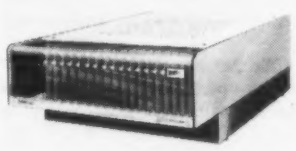
Dynelec said that an asynchronous channel feature allows speeds up to 9,600 bit/sec which is said to provide capability to handle hundreds of data terminals operating simultaneously.

Unlike conventional time division multiplexers, the Dynecom 70W is said not to reduce the number of ports available as higher speed terminals are added.

The Dynecom 70W has built-in visual diagnostic capabilities and allows manual selection of individual data channels for loop-back or lock-out control. Plug-in card modules permit future changes in equipment configurations.

The Dynecom 70W is described as being a hybrid data communications device combining the best features of direct-line connection, multiplexing, and store-and-forward switching.

Time division techniques are used in a design which is said to eliminate dedication of voice-grade trunk slots so that data concentration is intensified, making maximum use of the available communications bandwidth. In addition to providing an efficient communications system, the Dynecom 70W is effectively transparent to both the terminal operator and the computer, Dynelec said.



Dynecom 70W

As opposed to time-division multiplexing where a certain time interval is allocated to each low-speed line, asynchronous or statistical multiplexing services only those lines that are active. This results in a decrease of from 85% for the time-division units, to 12 to 1/2% for the asynchronous devices, in idle time, according to Dynelec.

Instead of using a time interval to identify the source and address of a message, the asynchronous system uses a data block which consists of a data record and an address. This address is said to enable the multiplexer to service the busy lines in any sequence, thereby increasing efficiency.

Error checking is performed within the multiplexer on the data sent over high-speed lines while data errors on low speed lines are ignored.

Longitudinal parity checking during multiplexing and demultiplexing is available as an option.

The Dynecom 70W can be connected to the Varian 620i, the PDP-11, and other communications processors. These can be connected to the multiplexer channel of an IBM 360 to replace an IBM 2703.

Prices for the Dynecom 70W range from $4,800 for a unit that can handle two low-speed lines, to $18,500 for the 64-line capacity unit.

The unit is available on a 45-day delivery schedule.

Dynelec Systems Corp. is at 139 Harristown Rd.

'Datascribe' Can Pool 750 Record/Min.

IRVINE, Calif. – Vanguard Data Systems, Inc. has added pooling – the consolidating of recorded source data from multiple key-to-tape units onto one reel of magnetic tape – to its line of key-to-tape systems.

The Vanguard KP-610/810 Datascribe/Pooler consolidates data at up to 750 (80/100 column) record/min to 160/200 character records. The equipment will also pool data at a rate of 440 (80/100 column) record/min onto one 2,400-foot reel of seven- or nine-track tape.

The poolers can handle seven-track taped data to nine-track format conversion or vice versa, the company claimed, allowing for use of a combination of units with all of them available as basic Datascribes. When the KP-610/810 is not in its pooling mode, it operates as a standard key-to-tape system offering data entry on a conventional keyboard with a display of column numbers and data.

The stand-alone system, designed to record source data directly onto magnetic tape, replaces the keypunch and verifier phase of card operation, the company said.

When the Datascribe/Pooler is used as a data recorder, its features include a variable word length from 80 to 200 characters at the standard seven-track (200, 556, or 800 bit/in.) or the nine-track (300 bit/in.) recording densities.

Additional features include automatic tape load and unload, read-after-write check, and automatic sensing of beginning-of-tape and end-of-tape. Programs are also automatically loaded from the tape leader.

As source data is keyed into the system, each character is loaded into the data register memory where it is displayed for the operator. Operator-sensed errors are erased and corrected prior to recording onto tape.

For most entry errors, the operator simply backspaces the memory, and keys in correct data. When an operational error is detected by the Datascribe, a buzzer sounds, and lights on the control panel indicate the corrective action required.

Purchase price of the KP-610/810 Datascribe/Pooler is $8,500 in the seven-track model and $9,500 in the nine-track model. Lease rates start at $160/mo. Delivery is from 30 days.

Vanguard Data Systems, Inc. is at 1642 Kaiser Ave.

Vanguard Data System KP-610/810

Hetra 200 Series Rivals S/3, GE-58 for Business Usage

By Frank Piasta
CW Staff Writer

MELBOURNE, Fla. – A series of computers, specifically intended to compete with the IBM System/3 and the GE-58, was shown last week by Hetra (formerly Computer Network Systems Corp.).

Featuring a 1-μsec cycle time and the ability to use a large variety of peripheral equipment, the Hetra S-Series systems are designed for business data processing applications calling for small-to-medium processors.

Three models of the S-Series are available: the S-I which is a small-scale system that can be used for accounting-machine type of operations, and the S-II and S-III models which can be equipped to perform most business applications, according to Hetra.

The systems share the Hetra 200 Series processor which contains the circuitry necessary to execute machine instructions and to transfer data between core storage and I/O units. The processor consists of a read-only control memory, control registers, timing, decoding, sequencing and arithmetic logic units, I/O data channels, and a priority interrupt channel.

Extensive use of "firmware," unique data organization, and a powerful instruction set are claimed by the company to provide throughput comparable to that of larger processors at prices usually associated with minicomputers.

Firmware macroprogramming within the read-only control memory makes available to the user a repertoire of 64 instructions, many of which are said to be roughly equivalent to high-level, business-oriented, programming language statements such as Cobol and PL/1.

This approach is said to simplify the programmer's task, to greatly reduce the amount of core-storage required, and to make possible more compact object programs.

Data Organization

The processor is designed to accept a wide variety of data. These include fixed-length binary fields to 16 bytes in length, fixed-length decimal fields up to 32 bytes in length, fixed-length decimal fields up to 32 bytes long including sign, fixed-length alphanumeric fields to 255 bytes, and variable-length alphanumeric fields up to 256 bytes long.

Every unit of data is self-defining, consisting of a data field preceded by a data code. The data code defines the type of data contained in the data field, and the length of the data field.

The data structure of the processor is broken down into data items, entries, and files. Entries are continguous series of data fields containing data of different types and lengths, identified by an entry descriptor which contains data codes associated with the fields as well as other control information. Entries may be accessed one field at a time or as an entire entry.

Files are continous series of fields of the same data type and length, identified by a file descriptor containing information associated with the data fields and control information. Files may be accessed on the basis of either one data field at a time or the entire file. Also included in the file descriptor are left and right pointers, both of which may be incremented and decremented to build, manipulate, and access tables, array buffers, and queues. Queues may be processed using last-in first-out (LIFO) or first-in first-out (FIFO) technique.

Instruction Set

All Series 200 instructions use single-address format, by referencing an implied data item, called the accumulator, in addition to the operand. However, any byte or series of bytes in core storage that have been designated an item, entry, or file can be defined as an accumulator or operand. Execution of most instructions can be made conditional by the existence of a specified status of condition flag.

The Series 200 processor instructions include: decimal arithmetic instructions; character instruction, such as Catenate, Delete, and Edit; binary instruction, including both arithmetic and logical commands; control instructions; I/O instructions; compare instructions, both binary and decimal; and replace instructions, that can move the contents of a data field into another data field of a different type and length with automatic truncation, padding, and conversion.

The Series 200 processors offer complete operating systems that are said to be comparable to those offered with larger systems. Included in the systems are: object program loader, job control scheduler, and I/O control system. The systems are claimed to reduce operator intervention and job preparation, require less highly skilled operators, and increase throughput by eliminating pauses between the execution of jobs.

Core Memory

Main memory for the Hetra Series 200 processing systems is provided by core. The cycle time of the three-dimensional, three-wire system is 1 μsec. The basic size available is 4K, nine-bit bytes, expandable to 16K in the S-I models, and 65K in the S-II and S-III through 4K increments. The core memory is in the mainframe with the processing unit.

Peripherals

A Hetra S/I system can be equipped with 10 and 15 char/sec teletypewriter terminals, 120 and 300 char/sec CRT displays, and 25 to 30 char/sec ledger card terminal. There are 300- and 400-card/min, 80-column card readers available. The system can also make use of cassette tape recorders in single or dual cassette configurations.

In addition to the above, the S-II and S-III models have additional peripherals available such as larger disk files, faster printers, and card-handling equipment. Communications line multiplexers, line terminators, and modem adapters may also be fitted to the systems, the company said.

A basic Hetra S/III would have a purchase price of $65,750. Equipment will be available on a lease basis, but Hetra said that details will be released in the near future.

First customer deliveries are scheduled for the third quarter of 1970.

Hetra is at 1151 South Eddie Allen Road.

Feature	Hetra S/III	IBM System/3	GE-58
Card Reader	400 card/min	500 card/min	200 card/min
Printer			
Speed	600 line/min	200 line/min	200 line/min
Print line	132 print pos.	132 print pos.	128 print pos.
Char set	64 char	48 char	63 char
Core storage			
Size	16K (65K max)	16K (32K max)	10K (max)
Speed	1 μsec	1.52 μsec	1.2 μsec
Disk			
Drives	2 (8 max)	2 (4 max)	2 (4 max)
Capacity	8.4 million	7.35 million	5.76 million
Avg access time	55 msec	153 msec	72.5 msec
Console	Yes	Yes	Yes
I/O Channels			
Input	2	1 I/O	1 I/O
Output	2		
Overlapped	Yes	Cycle steal	Cycle steal
Purchase Price	$65,750	$91,200	$70,100

Hetra Comparisons of Small Business Systems Based on Industry Sources

Portable Printer Features TTY 33 Compatibility

CAMBRIDGE, Mass. – A portable multiple-copy printer available from Computer Devices Inc. features Teletype Model 33 compatability in code, format, and keyboard.

The CDI 1010 printer, designed for time-sharing and minicomputer applications, sells at $1,800.

The features include an integral acoustic coupler, an impact printing mechanism which consumes no standby electrical power and prints four copies, internal storage of fan-folded paper, electronic keyboard interlock, and parity checking.

The device uses Ascii code with 64-character set. The format has 80 char/line and printing speed is 10 char/sec. Data transmission rate is 110 baud. The CDI 1010 operates in both half- or full-duplex modes.

Lease terms are also available. Delivery is 30 days.

Computer Devices Inc. is at 167 Albany St.

Burroughs L4000 Accounting CPU Uses Firmware for Intelligent Terminal Use

DETROIT – The first computer in Burroughs L series, designed specifically for accounting uses.
week.

Also able to operate as a billing computer, or as an intelligent terminal, the L4000 is said to perform in a variety of accounting and data collection environments, handling both simple and complex accounting operations, and the generation of management reports.

The L4000 is programmed internally, using a subset of Cobol. The subset used with the L4000 includes, according to Burroughs, not quite all of zero level Ansi Cobol. The discrepancies are due to the L4000 having a limited need for I/O routines, Burroughs said. An assembler is also available.

Main memory is provided by a fixed disk with a capacity of 1,024, eight-byte words. The disk revolves at 6,000 rpm and has a head-per-track configuration, resulting in an average access time of five msec.

Programming is performed through the use of firmware, strings of microinstructions stored on the disk. The microinstructions are used by the macromachine language generated by the Cobol and assembler. The firmware is designed for a particular L4000 configuration and can be changed quickly, in the field, to reflect changes in the physical configuration, Burroughs said.

Printing on the L4000 is accomplished with a device called a form handler. This unit can handle front-fed cut forms, ledgers, and unit set forms, as well as continuous forms and journals. The 26 in. transport has a 255-position print line, providing space for many kinds of forms and documents, according to Burroughs. The printer is capable of 20 char/sec.

Other peripherals available with the L4000 include a 20 char/sec punched paper tape reader and punch, and a 20 char/sec edge-punched card reader. Also, a 80-column card capability is provided by a 100 card/min reader and 20 col/sec punch.

The L4000 can also be used as an on-line terminal computer. Burroughs said that converting the L4000 is a simple procedure involving the addition of several circuit cards and the changing of the firmware program. It could be done on-site in less than an hour, Burroughs said, which would then make the L4000 capable of handling 1,200-bit/sec, half-duplex lines interfaced with Univac, RCA, and IBM, in addition to Burroughs computers, the company said.

L4000 Accounting Computer

The L4000 computer can be leased or purchased. Purchase price ranges from $14,290 to $26,000, depending on peripherals. Lease prices range from $360 to $630/mo.

In addition to the Cobol and assembler which are available at no extra cost, Burroughs is offering several applications packages. These packages have been unbundled and will cost from $290 for a net billing program to $1,535 for a lumber billing program. Packages available include payroll, accounts receivable, and posting, accounts payable, route accounting, garment billing, stock and bond confirmation, and others.

Custom programming service is available at 16 centers throughout the country, Burroughs said. Customer personnel can be enrolled in a training course in programming at a cost of $200. The two-week course covers both Assembler and Cobol.

First customer deliveries are scheduled for July, 1970.

Head Crash Prevention System Termed Adaptable to Most Disk, Drum Units

MENLO PARK, Calif. – A device that is claimed to detect impending head crashes in magnetic disk and drum units is now available from Royco Instruments, Inc.

Head crashes, the physical contract of a read/write head with the recording surface, are a major area of concern to computer operators. The external memory systems, because of the mechanics involved, are the least reliable portion of the computer system, according to Royco.

The Model 205/108 Head Crash Prevention System senses the increase in the rate of generation of very small particles within the disk drive or drum environment, which usually occurs well in advance of a head crash, the company said.

This increase in particles is detected by the device which advises the operator through a visual and/or audible alarm that a crash is imminent. The operator can then abort the program or retract the heads immediately before valuable information is destroyed, Royco explained. Automatic head retraction can also be accomplished with latching relays provided in the Royco system.

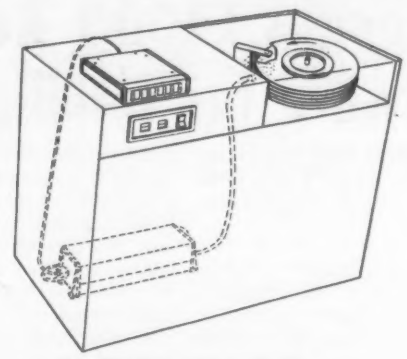
No modification to the disk or drum unit is required by the Royco unit. The only adaptation necessary is to insert a small plastic tube into the general area of the head memory surface interface, the company said.

The unit itself is designed to be mounted into the drive cabinet with a visible control panel on top of the drive.

The manufacturer states that the unit can be adapted to any disk or drum with a good air filtration system. Currently, the company is concentrating its efforts on units for 2311, 2314, and compatible drives. One Royco detector is sufficient to monitor three 2311s. A 2314 would require three detectors.

The Royco Head Crash Detector has been priced at $49.50/mo, or $1,980 on a purchase. Servicing is done on a replacement basis. Shipments to users are scheduled to begin in June, 1970 on a 30-day delivery schedule, Royco said.

Royco Instruments, Inc. is at 141 Jefferson Drive.



Model 205/108 Installation

Modems Bell Compatible

SILVER SPRING, Md. – Two modems compatible with Bell data sets are available from Tel-Tech Corp. The TT-202 data set operates up to 1,800 bit/sec and the TT-201 up to 2,400 bit/sec. Both models are available in PC card form and are rack or desk mounted.

Tel-Tech is at 9170 Brookville Road.

L-64 Controller

Controller Expandable Up to 64 Line-Adapter Units

IRVINE, Calif. – A communications controller subsystem, expandable from a configuration of one controller with 16-line adapter units to multicontrollers with up to 64-line adapter units per controller is available from KDI Interactive Data Systems.

Designated the L-64 Communications Controller, the subsystem interfaces with data sets or local terminals and a 16-bit processor to provide a complete communications system for applications such as a front-end processor, remote data concentrator, and remote terminal, the company said.

The controller features asynchronous communications at 2,000, 2,400, 3,600, 4,800, 7,200, and 9,600 bit/sec. Asynchronous lines are character buffered, while synchronous lines are double-character buffered.

Less then 15% of available processor time is required to handle 64- to 150-baud lines, all of which operate simultaneously in the full-duplex mode.

The L-64 Communications Controller costs approximately $15,100 for a 32-line system; with a 16-bit processor, the price is $23,600. Delivery is 45 days.

KDI Interactive Data Systems is at 17785 Sky Park Circle.

Direct Interface to Minicomputers Built into 400 Line/Min Printer

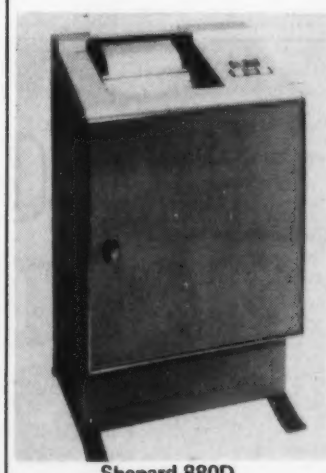
RICHMOND HILL, N.Y. – A line printer with direct built-in interface to the PDP-8, the Hewlett-Packard 2116, the Varian 620/i, or the Honeywell 316 and 516 minicomputers is being offered by the Vogue Instrument Corp., Shepard Division.

The Shepard 880D prints 80 columns wide at speeds up to 400 line/min and costs $7,600, the company said.

The printer features an ink roller printing mechanism which reportedly eliminates the fabric ribbon, a tractor feed sprocketed multicopy forms capability, and full line buffer memory.

For interfacing with other popular minicomputers, the 880D is available with complete electronics and controls for $6,800, without card interface, although this can be provided at an extra cost.

Vogue Instrument Corp., Shepard Division, is at 131 St. at Jamaica Ave.



Shepard 880D

Interface Accepts Parallel BCD Signal, Converts to Ascii Code for T/S Use

PHILADELPHIA – A signal-conditioning coupler that permits interfacing of a digital instrument with a teletypewriter has been developed by Community Computer Corp. (CCC). The device is said to be suited to unattended preparation of data for computer input, particularly in a time-sharing environment.

Designated the Model 2020 Instrument/Teleprinter Interface, the device is designed to accept a parallel binary coded decimal (BCD) signal from instruments with such output capabilities, and to convert it to Ascii code.

The device provides an output usable in three different ways, the company said: to drive a paper tape punch off-line; as an on-line, straight-through input to a computer; and for the preparation of page-form hard copy on

dp accessories

a teletypewriter such as the Teletype Models ASR-33 or ASR-35.

In a time-sharing environment, the Model 2020 permits data conversion and transfer directly between the measuring instrument and the computer, via the teletypewriter, acoustic coupler, and telephone line, CCC said.

In on-line operations, the device can automatically add non-data characters – such as data delimiters and control characters – required by the computer. Eight characters are available for this purpose; three are hard-wired and five are programmable.

Plug-in, read-only memory (ROM) elements control the output format of the Model 2020, making the interface adaptable to virtually any BCD code, the company claimed. Input code is also said to be easy to change through a programmable cable between the instrument and the interface.

Monolithic integrated circuits and an integral power supply, contained on two epoxy fiberglass printed circuit cards, comprise the Model 2020. The standard package, intended for hard-wired installation in the base of an ASR-33 or ASR-35 Teletype, sells for $975.

CCC is at 185 W. School House Lane.

Microfilm Reader for 16mm Film Retrieves 100 Ft in 10–12 Sec

NEW YORK – A microfilm reader for 16mm film with a retrieval rate of 100 ft of film in 10 to 12 sec is being offered by Microfilm Products Inc.

The Model 2000 Microfilm Reader operates with either reels or cartridges of Recordak and 3M, and can be adapted for use with Stromberg Carlson cartridges.

Features of the unit include magnification factor of 24, a high resolution 15 by 15 neutral screen, and constant illumination through a 150-watt, quartz-Halogen lamp.

The device also maintains a constant variable lower speed. Instant braking is guaranteed at both speeds. The unit weighs 20 pounds.

The microfilm reader costs $395, and is available for 10-day delivery.

Microfilm Products Inc. is at 40 West 15th St.

Data-Verter MC-21 Mobile Cart

Mobile Cart Enables Electronic Order Writing

ALBERTSON, N.Y. – An electronic mobile cart used for writing orders directly from store shelves is available from Digitronics Corp.

With the Data-Verter Model MC-21 Mobile Cart and data acquisition equipment, a clerk can record store orders as he walks down the store aisles, according to the company. Orders are keyed-in and recorded on magnetic tape for phone transmission to a computer center.

The cart provides a mobile power supply and platform for Data-Verter data-acquisition equipment, the company said. The device uses a standard 12-volt storage battery as the power source. An inverter converts the dc battery power to 115 vac and applies this power to the data acquisition equipment.

Under normal operating conditions, power can be generated for a full working day, the company said. To recharge the battery, the cart is connected to a wall outlet overnight and placed in the battery charge mode.

The MC-21 can supply power for data input operations while the battery is being charged, a company spokesman said.

The MC-21 costs $425 and is available on a 60-day delivery schedule.

Digitronics Corp. is at 1 Albertson Ave.

Punch Operates At 150 Char/Sec

ALEXANDRIA, Va. – A mylar/paper computer-compatible tape punch available from Advanced Space Age Products Inc. punches mylar/paper at speeds up to 150 char/sec.

The Model P-150 punch with complete electronics, DTL, TTL compatible, sells for approximately $2,250 with a 120-day delivery.

Advanced Space Age Products Inc. is at 4308 Wheeler Ave.

Between Industry and Education

EDP Situation Demands Active Cooperation

By Thomas C. White

It is evident that industry stands to gain much by working more closely with our smaller colleges and junior colleges, in addition to continuing cooperation with the larger institutions. This might well involve contributions of time, insight, experience, and financial assistance to help such schools establish computer facilities and curricula at various levels.

This is the second of two articles on meeting EDP education and manpower needs by Thomas C. White, director, public information and educational services, American Federation of Information Processing Societies (Afips).

Specific activities could include assistance in the evaluation of local needs, participation on community and EDP advisory committees, review of ongoing programs, possible supply of educational materials and spare computer time, and assistance in the ongoing training of instructors, as well as direct financial support.

The Private EDP School

The private EDP schools merit careful evaluation among methods of meeting data processing education and manpower needs during the '70s.

Such schools, in general, are neither plague nor panacea. At a minimum, they represent a potentially valuable resource to the computer field for the training of entry-level personnel.

Industry participation is essential to the proper orientation and utilization of these schools and their graduates. While professional societies and accrediting bodies can play a key role, they cannot, by themselves, legislate a workable solution.

Running a Taught Ship

The only meaningful answer lies in broadly based cooperative programs aimed at improving educational and training standards; curtailing the activities of inadequate schools; and providing legitimate employment opportunities for graduates possessing the proper aptitude coupled with adequate training.

In terms of size alone, private EDP schools demand close scrutiny. In recent years, they have mushroomed to a current total of about 1,000 in operation. While there is little concrete data available, it is estimated from an Afips pilot study that these schools now may be turning out more than 80,000 graduates per year.

Of these, a "best guess" would be that about 45,000 are graduates of business applications programming courses, while about 8,000 have completed courses in computer operations. As indicated in Part I of this article [CW, April 8], Afips hopes to undertake shortly a national study to determine how well such schools are meeting industry needs.

EDP schools have become a $100 million-a-year business. However, there are currently no widely accepted educational or

Education

proficiency standards or rigid accreditation procedures covering the widely varied programs they offer.

Some obviously are providing worthwhile preliminary training. Others are providing poor training or worse, at high fees, and in so doing are seriously tarnishing the image of the computing field.

Sketchy Success

To date, state and federally sanctioned accreditation has met with little success. State requirements vary greatly and are usually not in keeping with current industry needs. However, the three national accrediting bodies – the Accrediting Commission of the National Association of Trade and Technical Schools (Natts), the Accrediting Commission for Business Schools (ACBS), and the Accrediting Commission of the National Home Study Council (NHSC) – are seeking improved,

(Continued on Page 44)

Afips Committee Seeks Guidelines for Use by Schools

(Continued from Page 43)

unified guidelines and additional assistance in their efforts toward the voluntary accreditation of schools.

All of us have a major stake in the outcome of these efforts. The legitimate school must base its long-term profitability on the supply of a salable product to user groups. In addition, potential employers have the responsibility of realistically determining their present and projected job requirements, implementing sound internal policies based on these needs, and maintaining a constructive dialog with reputable EDP schools in their area.

Recent EDP school guidelines prepared independently by The Association for Computing Machinery and The Data Processing Management Association represent a major step toward setting educational and proficiency standards. As a related activity, Afips is chairing a special Ad Hoc Committee on EDP Education that includes representatives of these two groups, the Business Equipment Manufacturers Association, the American Association of Junior Colleges, the National Commission on Accrediting, the U.S. Office of Education, the previously mentioned accrediting bodies, and other interested groups.

Moving Together

A prime objective of the committee is to foster development of a single, unified set of guidelines based on actual industry needs for use by the schools, the accrediting bodies, and possibly by state agencies.

Two subcommittees have recently been set up to help implement this effort. One will concentrate on required educational standards and related hardware needed for hands-on use. These, in turn, will be keyed to "universal" job descriptions and proficiency requirements for entry-level positions with emphasis on business applications programming and computer operations. The second will examine existing standards covering business practices and ethical conduct to assure that uniform, realistic standards are required of all schools receiving accreditation.

While the poorer schools constitute a serious problem, a number of private EDP programs indicate that the better schools could be of considerable assistance. For example, data supplied by the San Fernando Valley Automation Institute and the Urban League Data Processing Training Center, both of Los Angeles, indicate that they have achieved notable success.

Mapping an Approach

Much remains to be done at both the national and local levels. The Afips ad hoc committee is one viable mechanism. In addition to EDP guidelines, this informal group is vitally concerned with matters relating to entry-level manpower needs and the exchange of information on the desired educational background for various positions in the computer field. The group, as such, represents no single vested interest and welcomes participation of all major groups with a prime interest in these areas.

The individual organizations participating in this effort also welcome input from industry and user groups. Afips recognizes its responsibility to work closely with such groups in planning for the orderly growth of the EDP field. This includes exploration of possible cooperative efforts, including joint meetings, seminars, or programs on manpower requirements and related critical areas vital to the advancement of computing.

At the local level, computer organizations and major employers of EDP personnel can play an important role through individual efforts or collective action. In addition to liaison with EDP schools, such efforts might include active cooperation with Better Business Bureaus, chambers of commerce, local chapters of professional societies, educational and guidance organizations, state employment service offices, and similar groups.

Persons 'Who Must Confront' Computers Take 'How to Speak Computer' Course

DALLAS – A new course entitled "How to Speak Computer" received a warm reception when offered by the School of Continuing Education at Southern Methodist University this term.

Taught with the cooperation of the Small Business Administration, the informal, nontechnical course was directed at owners of small or large business, department heads, and others interested in bridging the "communications gulch."

Noting that more than 100 people signed up for the initial offering, Associate Dean Mary Miller said, "We feel the course has been very successful, and I'm sure we'll offer it again.

"There's quite a bit of frustration and resistance to the idea of computers," she said. "We wanted to wait until enough of this frustration set in to arouse interest on the part of nontechnical people and decision-makers who must confront computer systems . . . . We were really shooting in the dark when we offered the course, but we think we really hit the target."

Raymond D. Noah, director of systems and data processing at SMU, taught the course. "Large numbers of people need to become acquainted with computers," he commented. "Some people have a terrible time, for instance, writing letters that should stop a computer from sending bills that have been paid, [but] basically, the people who receive the letters cannot communicate with those who caused the bills to be printed.

"Any business manager not aware of what a computer can do as a business tool is rejecting something as ordinary as the telephone or typewriter. It's not a tool of the future; the computer is now," Noah stated.

Beginning in January and ending in March, the weekly sessions coverd such topics as introduction to computers, terms, definitions; equipment and data storage devices; uses and applications; communicating and flowcharting; system design and procedures; and information storage and retrieval.

Driving Records On Tape

BATON ROUGE, La. – Computerization of driving records of all Louisiana motorists will be completed by the end of 1970.

The computer program will quickly provide courts and law enforcement officers with data on motorists. The data will aid in determining if a driver is a multiple offender and whether his license should be revoke.

COMPUTERWORLD

societies

IEEE Computer Show Has 20 Sessions

WASHINGTON, D.C. – Plans are nearly completed for the IEEE Computer Group International Conference and Exposition to be held June 16-18 at the Washington Hilton. Technical session topics have been organized around the conference theme of terminals, peripherals, and memories for the 1970s.

One of the first conferences exclusively for designers and manufacturers of peripheral equipment, the show will include exhibits by both foreign and domestic manufacturers of peripherals and memories.

Market Expansion

The IEEE Computer Group has designed much of the conference to examine projections that the peripheral market will be twice that of mainframes in the 1970s. Technical sessions will investigate the peripheral hardware, software, and systems architecture expected to develop during the decade, with emphasis divided between impact on the market and technological innovation.

Conference chairman is Bob O. Evans, president of IBM's Systems Development Division. The international coordination is being handled by Maurice Allegre, director of electronics in the Office of the Prime Minister of France.

The conference will feature about 20 technical sessions, each one highlighted by a paper from a senior scientist in the field. Although the show is aimed primarily at the engineer and designer, the first plenary session, "Technical and Market Overview," will relate the technology projected for the 1970s with the direction the computer market is expected to take.

The closing session, "Systems Architecture," will deal with two current problems in systems architecture design: the requirement to meet the needs of the user and the mismatch that has developed because input/output speeds of access and response times have not kept pace with advances in basic computer performance.

Variety of Topics

Other sessions will be devoted to such topics as advanced terminals and sensor actuator devices, low-cost teledisplays, computing power in terminals, software and terminals, terminals for news processing and editing, mainframe memory technology, and new memory devices. Speakers will include Prof. Daniel L. Slotnick, professor of computer sciences at the University of Illinois; Dr. Gene M. Amdahl, IBM fellow; Dr. Lawrence Roberts, director, information processing office, Advanced Research Projects Agency, Department of Defense; and Werner L. Frank, senior vice-president of Informatics.

Although each session has been organized to provide the designers and engineers with significant projections for the '70s, the "Great Memory Debate" will surely be a conference highlight. It will encompass debates in three areas: magnetics versus semiconductors; core versus plated wire; and hybrid semiconductor memories, MOS and bipolar versus single technology semiconductor memories, MOS or bipolar.

Dr. Lee A. DuBridge, scientific adviser to President Nixon, will be the luncheon speaker June 17.

Registration in advance is $25 for IEEE members and $30 for nonmembers and at the door $30 and $35 respectively. Admission to the exhibits is free. For additional information, contact Don E. Doll, conference vice-chairman, 18100 Frederick Pike, Gaithersburg, Md. 20760.

Babbage Society Membership Open For New Federated Group of SDE

NORTHFIELD, Vt. – Data educators interested in the history of automation may now become charter members of The Babbage Society, a proposed new federated group of the Society of Data Educators (SDE).

To achieve federation, 25 prospective members must petition the SDE executive board. An SDE membership fee of $5 is the only charge to Babbage Society members.

Proposed activities include a search for proof that the Grant Calculating Engine was actually shown at the 1876 Centennial Exhibition in Philadelphia, and republication of the first book ever printed by computer.

Interested SDE members should contact Enoch J. Haga, 247 Edythe St., Livermore, Calif. 94550; non-SDE members may join by sending the $5 fee to the SDE Publishing Office, Norwich University, Northfield, Vt. 05663.

SDE members receive the "Journal of Data Education" and free membership in any or all of the society's groups.

Calendar

April 18, Philadelphia – "Interface," a one-day ACM Allegheny Region Symposium to provide communication between computer science students and professionals in the area. Contact: Co-Chairmen Richard Peebles and John Miles Smith, The Moore School of Electrical Engineering, 33rd and Walnut Sts., Philadelphia, Pa. 19104.

April 20-21, Atlantic City, N.J. – Bank Automation Association of Delaware Valley, Second Annual Spring Seminar. Contact: Robert B. Muller, Bank Automation Association, c/o First National Bank of South Jersey, Pleasantville, N.J. 08232.

April 22-23, New Orleans – Spring meeting of the Scientific NCR Users Group (Snug). Contact: A.G. Marjerison, United Aircraft, Ltd., P.O. Box 10, Longueuil, Quebec, Canada.

April 22-24, Dallas – 1970 Southwestern IEEE Conference & Exhibition. Contact: The Institute of Electrical and Electronics Engineers, Inc., 345 E. 47th St., New York, N.Y. 10017.

April 24-25, San Francisco – North American NCR Financial Users Group. Contact: Ernest Beron, Old Stone Bank, 86 S. Main St., Providence, R.I.

April 27-29, New York – AMA seminar "Developing Effective Standards and Documentation for EDP Applications." Contact: AMA, The American Management Association Bldg., 135 W. 50th St., New York, N.Y. 10020.

April 27-30, Los Angeles – 1970 IEEE National Telemetering Conference. Contact: Robert F. Lander, TRW Systems Group, One Space Park, Redondo Beach, Calif. 90278.

April 28-May 1, San Francisco – National Microfilm Association 19th Annual Convention and Exhibition. Contact: Frederick L. Williford, Executive Vice President, National Microfilm Association, P.O. Box 386, 250 Prince George St., Annapolis, Md. 20414.

Societies

Meeting in Germany

BONN, Germany – The German chapter of the Association for Computing Machinery (ACM) will host the first joint meeting of European ACM chapters here on May 21-22.

In addition to the conference, entitled "International Computing Symposium 1970," a one-day preconference seminar on digital simulation techniques and languages has been scheduled for May 20. Discussion topics include random-number generators, models, simulation languages and packages, structure of the simulation model, preparing a simulation, and cost effectiveness of simulation.

Additional information is available from C.R. Rudolph, ACM Conference Registration, c/o Gesellschaft für Mathematik und Datenverarbeitung, 5201 Birlinghoven (Schloss), Bonn, Germany.

Civil Engineers to Meet

BOSTON – The fifth semiannual worldwide meeting of the Integrated Civil Engineering System (Ices) users group has been scheduled for June 18-19 at MIT.

Developed at MIT in 1964 as a computer-based system for the civil engineering community, Ices consists of a number of integrated computer programs for use in civil engineering, construction, soils, architecture, scientific, and other applications.

Conference details are available from program chairman Dominic Cucinotti, c/o Stone & Webster Engineering Corp., P.O. Box 2325, Boston, Mass. 02107.

Name Change

WASHINGTON, D.C. – The American Society for Information Science (Asis) has announced a change in the name and frequency of its publication. As the result of plans begun in 1967, the quarterly, "American Documentation," will now be issued every two months under the name "Journal of the American Society for Information Science."

Arthur W. Elias will continue as editor, and the subscription rate will be unchanged. Asis is at 2011 I St., N.W., 20006.

Bema Moving

NEW YORK – The Business Equipment Manufacturers Association (Bema) has signed a lease for its new headquarters in Washington, D.C. Bema President C. Mathews Dick Jr. said the date for the move to 1828 L St., N.W., tentatively has been set for June.

Dick noted that the data processing group has already opened an interim office in Washington that will serve as headquarters for the group's special projects section.

The new site was chosen primarily for its proximity to many governmental agencies and departments, Dick said.

Canada Adapso Chapter

NEW YORK – The Association of Data Processing Service Organizations, Inc. (Adapso) has announced the establishment of the group's first chapter, in Canada.

The new chapter was formed to accommodate the membership of the 22 data centers currently serving Canada. According to Adapso Executive Vice-President J.L. Dreyer, an organizational meeting for the election of officers and directors has been set for mid-April. The president of the Canadian chapter will be a member of Adapso's board of directors.

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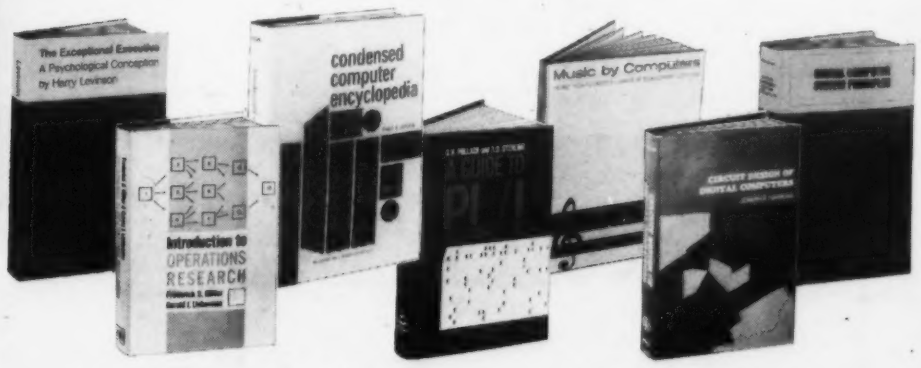

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MEMOREX

L.A. Air Control Center Gets 'New Generation' System

By Harvey Elman
CW Staff Writer

LOS ANGELES – The Air Route Traffic Control Center in Los Angeles, operated by the Federal Aviation Administration (FAA), has become the first in the nation to begin operation with the "new-generation computer system and program," according to Secretary of Transportation John A. Volpe.

Operational around-the-clock, the equipment comprises the first "package" of a two-step automation program expected to be operational in all 20 air route traffic control centers in the mainland U.S. by 1974.

Automation reduces controller workloads by automatically handling incoming flight information messages, performing any needed calculations, and distributing flight data strips, as needed, to the controller positions.

Each center will provide radar DP, automatic radar tracking of aircraft, and permit automatic display of vital flight data in electronically written letters and alphanumerics on the face of the controller's radar display. The controller uses printed strips to record this data and small plastic markers (called shrimp boats) to track aircraft targets.

The FAA's National Airspace System program office, which is responsible for the program's implementation, is now following through with the data handling system at four other high-density centers. These are at Fort Worth, Kansas City, Denver, and Oakland.

Programs at each center will be virtually interchangeable with those for all others, providing maximum compatibility and economy, according to the FAA.

The heart of the system, an IBM 9020 (a special modification of the 360), is the central complex which performs the bulk of the DP functions – the actual calculations, routing instructions, and such tasks as the rescheduling of computer workload in the event of component failure.

Associated with the complex in each center is a specially developed Ratheon computer display channel, which accepts data display messages from the complex and generates alphanumeric, symbolic, and map data for presentation on the controller's display. Data entry devices are provided at the operating positions to permit the controllers to send messages to the computer complex.

A Burroughs digitizer converts normal radar receiver video into a digital message for each aircraft target detected. This digital data is transmitted over telephone lines from remote radar sites to the Air Route Control Center for entry into the complex.

Two IBM Employees Granted Patent For Movable Head Disk Storage Unit

ARMONK, N.Y. – Two IBM employees have been granted the basic patent on the movable head computer disk memory storage unit.

U.S. Patent No. 3,503,060, which the inventors have assigned to IBM, was issued to William A. Goddard of the company's Systems Development Division Laboratory in San Jose, Calif., and John J. Lynott in its Advanced Systems Laboratory in Los Gatos, Calif.

In recognition of their achievement, the two recently shared an $80,000 IBM outstanding invention award which followed a similar $20,000 award previously shared by them.

The $100,000 total is the second largest amount ever presented by IBM for an invention.

Last year, three IBM employees shared a $180,000 award for the development of an input-output channel multiplexer.

The disk storage unit stores large amounts of data outside a computer, but makes it available at very high speeds. Before it was developed, such data to be stored away or retrieved could only be handled by relatively slow serial (or in-line) methods.

The disk storage unit stacks metal disks coated with metal-bearing material which can be magnetized in "tracks" or recording paths. The recording heads go selectively to any track on a disk surface to swiftly record or extract data at that "address."

Direct-Access Basis

This concept is the basis for many direct-access storage products made by IBM and other manufacturers.

The patent issuance covers a broad range of disk drives, as well as combination of the drives with other devices to make a complete disk storage unit.

IBM will make non-exclusive licenses available to other manufacturers under the patent it now holds.

The Ramac 305, IBM's first direct-access storage product, was introduced in 1956.

Babcock Outlines T/S Industry Growth, Says 'Revolution' Cause of Attrition

By Phyllis Huggins
CW West Coast Bureau

LOS ANGELES – The attrition in the time-sharing industry is due to the failure of companies to see the complete reversal of the market, the revolution in time-sharing, according to James D. Babcock, board chairman of Allen-Babcock Computing Inc.

"The recent cutback at SBC, ITT, and GE are all due to this failure," Babcock noted.

"At first, we were selling raw computing power, now it's an end product. This is a 180-degree change. The user is no longer buying milliseconds of computer power. He couldn't care less. Now he wants to know how he can put his inventory control problem, his payroll job, or other specific work on the machine," he said.

'Four Main Periods'

"There have been four main periods in industry growth," he continued. "In 1965, it was a scientific and engineering market with packages such as GE's Basic and IBM's Quiktran. In 1967, we saw access to small files developed in programs such as Datatext. In 1967-68, large files evolved. At this period, 150 companies entered the business and the marketplace got saturated. In 1969, the development of business systems started. This will be the 1970-75 era. If a company isn't in it now, or hasn't been working on it for a couple of years, they've lost out."

Industry Paradox

Babcock cited the cost of jumping from one type of market to another. "As part of the paradox we are seeing in the industry today, IBM recently cut off large support to SBC. They are now stopped at the small files level." IBM's reasoning was that SBC must be on a profit basis this year. The nine centers were also recently reduced to three. In Babcock's opinion, three centers are insufficient for a profitable result.

"The supplier today must be able to offer a large range of problems. We find the businessman a great customer. He is slower to come on but, once he does, he is a repeat user. He doesn't want to program, he merely wants one job done over and over. The engineer-scientific user is a one-shot customer. Businessmen use more time per terminal," said Babcock.

100-Terminal System

In April, Allen-Babcock will go on the air in New York with the beginning of a 100-terminal system for the Department of Employment. Job-matching for applicants will be provided through a new program called Rair which combines interactive computing with remote batch work, the wave of the future for time-share use, according to Babcock.

Telephone Change

Unlike others in the industry, Babcock feels that he has no fight with the telephone companies. "They have made fantastic strides. Five years ago, multiplexers and couplers weren't available. There is $40 billion worth of switching equipment in this country's telephone system. It is adequate for data needs for the next 10 years, and the telephone company is still progressing. The computing industry had done a lot to make them change, but at least they have done so and are continuing to change. There's a tremendous amount of power left in the telephone companies," he said.

Xerox Builds California Research Lab

STAMFORD, Conn. – Xerox Corp. will establish a West Coast research lab in June to be known as the Palo Alto Research Center.

Dr. J.E. Goldman, senior vice-president for R&D, announced that "the laboratory will focus its attention on basic and applied research to advance DP technology and will give added strength to the company's basic science capability underlying the known, and as yet unknown, technologies relevant to its business."

The lab will seek ways to combine Xerox "know-how" in imaging technology with those of DP and communications "into systems which can influence the spectrum of information flow in business, education, and elsewhere," Goldman said.

Dr. George E. Pake was appointed as a vice-president of the Research Lab Division and manager of the new research center. Pake, a former physics professor and vice-chancellor at Washington University, was a member of the President's Science Advisory Committee.

The exact size of the lab's work force has not yet been determined.

Plans for establishing the new lab, to be located in the Stanford University Research Park, began last year when Xerox entered the computer industry by acquiring Scientific Data Systems, located in El Segundo, Calif.

Evans Foresees Complex Computer Systems as 'Tomorrow's Standard'

NEW YORK – "Today's most complex computer systems will become tomorrow's standard," said Bob O. Evans, president of IBM's Systems Development Division, speaking at the keynote session of the recent IEEE International Conference.

During a panel discussion on "The Emerging Seventies," Evans predicted a heterogenous mix of data processing systems and services solutions.

"No single approach will clearly dominate, but the trend will be away from local to remote computing. There will be increased pressures for high availability, orderly growth through modularity, and more user-oriented total systems design as non-professional users increase," Evans said.

He indicated that the market outlook is excellent and challenging as customers become more demanding, suppliers more skillful, and technologies more versatile.

Now, and even more in the future, Evans continued, the shortage of skilled people is limiting application development. The present shortage will be felt in systems analysis and systems programming.

In examining the outlook for computers in the seventies, he concluded: "To the involved professional who is anticipating changes . . . they are certain to come. It will be an interesting and exciting time."

Honeywell to Open Service Center

MINNEAPOLIS – Honeywell is planning to open a computer data-conversion service center in Tampa, Fla., its first entry into the service center market.

Equipped with an optical character reader and Honeywell key-tape data-preparation devices, the facility may become the prototype for additional Honeywell centers in other parts of the country, according to a company spokesman.

Customer information will be typed onto special page forms, which are then transferred to magnetic tape by the high-speed optical character reader. The tapes are then sent back to the customers for use on their own computers.

The company said the center, initially to be staffed with 10 typists, may grow to 100 employees before the end of 1970 if business develops as anticipated.

Trade Shorts

The Pennsylvania State Police Department has signed a letter of intent with Univac for two 418-IIIs for its computer communications network, which will also include Uniscope 100 terminals. Scheduled for December delivery, the information retrieval system [CW, March 4] will provide data within 30 seconds to protect policemen.

CDC has agreed in principle to sell Goslin-Birmingham Corp., Birmingham, Ala., a subsidiary of Commercial Credit Co., to Palo Alto-based Envirotech for an undisclosed amount of cash.

IBM has opened a Basic Systems center in its Minneapolis office to assist users of small computer systems and electronic accounting machines.

Computer General Corp., Washington, D.C., is marketing software operating systems designed to improve the efficiency of the IBM 360.

President Paul T. Sterbutzel said Computer General, which is privately held, previously has been developing software packages which will "enhance" IBM's own computer programs. Computer General's package (a program adaptable to many users) improves the 360's efficiency, he said.

Sterbutzel feels the "market for software programs is right at present for the product I can provide." Faced with dwindling profits, he said, large corporations will be taking a harder look at their systems, hoping to improve their efficiency.

A Solid-State division to spearhead RCA's growing role in the new electronic technologies that are revolutionizing communications, DP, and space exploration, has been established, according to Robert W. Sarnoff, RCA chairman and president.

William C. Hittinger, president of General Instrument Corp., will join RCA April 15 in the newly created position of vice-president and general manager, Solid-State division.

Sarnoff said that the new division was formed through the consolidation of RCA's Integrated Circuit Technology Center of Research and Engineering and the solid-state operations of the company's Electronic Components activity.

Advanced forms of integrated circuitry, computer memories, and TV data storage and display devices highlighted the RCA exhibit at the IEEE convention in New York last month.

Alpex Computer Corp. shareholders approved a previously announced agreement with Pitney-Bowes Inc. to form a jointly owned company called Pitney-Bowes-Alpex Inc., to manufacture and sell computerized point-of-sale systems. Alpex said the new company is expected to begin operation April 10.

A merger between Tymshare Inc., Palo Alto, Calif., and Dial-Data Inc., Newton, Mass., has been approved with Tymshare the surviving name. Tymshare President T.J. O'Rourke will preside over the combined organization, and Dial-Data President L.C. Clapp will become its executive vice-president.

"Our combined organization now constitutes the third largest operation in being, ranking in size only behind the IBM and GE time-sharing activities," O'Rourke said.

A full roster of time-sharing and remote processing services and products, including terminal equipment and acoustic couplers, will be provided.

Datatron Inc., Santa Ana, Calif., has shipped the first of its new line of computer-controlled, integrated circuit testers, utilizing a reportedly new pin-oriented concept, to Memorex Corp., Sunnyvale, Calif., for testing printed circuit boards.

The first unit of Datatron's other major new product, the Vidicue video tape editing system, is in operation at CBS TV station WCAU, Phila., Arthur L. Purcilly, Datatron president, said.

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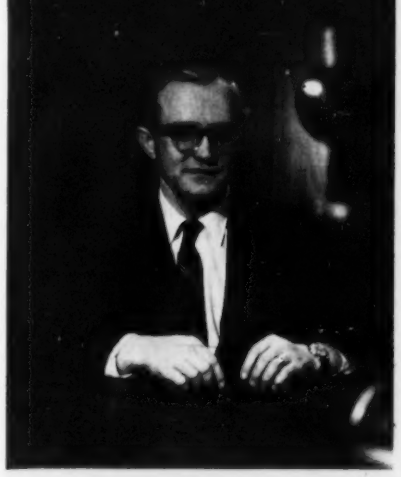

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SAM-D Display Console

Shown is the command and control display console for the U.S. Army's SAM-D air-defense missile system undergoing testing at Raytheon Co.'s Missile Systems Division, Lexington, Mass., prime contractor for the new system. Display consoles will be installed in battery control and fire control units in SAM-D system, currently in advanced development stage. Information from system's phased array radar will be diplayed for use by field commanders. The advanced design phased array radar performs functions requiring several radars in other systems. It will be capable of detecting targets, tracking them, and tracking and issuing guidance commands to the missile while in flight.

Data Power, Viatron Sign Deal For 33,900 Input Terminals

NEW YORK – Data Power Inc., a computer services franchise firm, has signed a letter of intent with Viatron Computer Systems Corp., Bedford, Mass., for purchase of 33,900 System 21 input terminals during the next four years.

The order is dependent on evaluation tests now being run on the equipment at Data Power's New York headquarters.

Under the tentative agreement, Data Power will order 1,014 units for delivery by the end of 1971 and the balance by the end of 1973. Meanwhile, the firm has leased six System 21 microprocessors, which include a Model 3001 video display subsystem and Model 4001 keyboard.

Arthur L. Leff, Data Power president, estimated the order could amount to a monthly rental of $1.4 million by the end of the four-year period, based on Viatron's current rental fee of $44/mo for the System 21 equipment.

The ordered units would first be installed in the firm's regional franchised data centers [CW, March 25], said Leff, then in customers' locations for direct data input and transmission from them to regional and central batch processing facilities.

Data Power has mapped out a network of 140 franchise areas nationwide.

"The number of units may seem large at this point," he explained, "but not in terms of our potential market of an estimated 900,000 small businesses in the U.S. of from nine to 500 employees. We expect to be servicing a good share of these businesses by early 1971."

4th Generation Called Unlikely In Near Future

By Paul Broadhead
Special to Computerworld

LONDON – A fourth generation of computers, heralded by a similar technological breakthrough as the 360 series, is unlikely within the predictable future, according to speakers at an Infotech State of the Art series of lectures, entitled "The Fourth Generation," and held at the Cafe Royal.

Solid Reasoning for this opinion was given by Iann Barron, managing director of Computer Technology Ltd. (manufacturers of the Modular One minicomputer), who stated that investment in computers had reached £900 million in the UK, and 40 billion dollars in the U.S. – an investment which could not be discarded, even as lightly as the investment in the 1400 series.

The fourth generation, according to Barron, and other speakers, will come however – and will be the result of greater user orientation equipment, with associated software developments. Some technological innovations would also be made in the next five or so years, but these would only occur taking due notice of the need for compatibility with the current generation of equipment.

Some suggested moves towards the user-orientated fourth generation included a greater use of data networks, and dedicated subsystems; new interfaces in software (such as standardized operating systems) enabling users to make an easier transition between types of equipment; more sophisticated store management and addressing routines; modularity in operating systems; and, from at least one speaker, a science fiction fantasy, which nonetheless pointed to the need to improve man-machine communication.

Report Cards Computerized

FREEHOLD TOWNSHIP, N.J. – The Freehold Regional High School Board of Education has awarded a contract to National Computer Analysts, Inc., Princeton, to provide student scheduling and report services for the current school year.

The cost of student scheduling is $1.80 per student; the charge for student report cards is 60 cents per student.

Profile information is to be charged 25 cents per student, and student course changes 10 cents.

Computer Upkeeps Apartments

DETROIT, Mich. – A scientific computer system designed for multifamily operations is said to provide more efficient upkeep service for tenants.

When an apartment needs painting or other periodic maintenance, the machines automatically alert the management.

Defense Agency Accepts Honeywell Digital Data Link

CLEVELAND – The first step in a nationwide computerized system for defense contract administration has been taken with the acceptance of a Honeywell-developed digital communications system at the Defense Supply Agency's regional Defense Contract Administration Services (DCAS) headquarters.

The next three systems are being installed this month in regional DCAS offices in New York, St. Louis, and Los Angeles. The remaining seven are to be delivered by June to other DCAS regions in Atlanta, Boston, Chicago, Dallas, Detroit, Philadelphia, and San Francisco.

The systems, Honeywell said, will link selected contract administration offices at districts and contractors plants in each DCAS region with a communication control terminal at the regional headquarters, and will permit rapid transmission of narrative and data traffic.

The communications control terminal at the regional headquarters will be connected to the automatic digital network (Autodin) which services the Department of Defense activities throughout the free world.

The installation is being performed by the new Honeywell Data Systems Division (DSD) with equipment provided by two other Honeywell divisions under an $8,084 716 contract, according to Dr. James J. Renier, DSD vice-president and general manager.

The EDP Division in Wellesley Hills, Mass., will provide 11 special Series 200 computers called communications control terminals (CCT-07) with specially developed communications software under the $5,729,116 portion of the contract.

The Data Products Division in San Diego will provide 52 Keytape data preparation units with communications and line printer attachments under the $2,355,600 portion of the contract. The Keytape units, which transcribe source data onto magnetic tape, are being installed in contract administration offices and districts and will be linked directly to the CCT-07 terminals in the 11 DCAS regions, Honeywell said.

Contract data will be sent via Keytape units from contract administration offices direct to the regional terminals, which will route the data to the DCAS data processing centers. The Keytape devices can transmit data over standard telephone lines and print hard copy at 300 line/min.

Defense Contract Administration Services, the organization within the Defense Supply Agency which operates the 11 regional headquarters, was organized in December, 1965, to consolidate management of armed forces' contracts. Efforts since that time have been directed toward fully automating the DCAS function under the mechanization of contract administration services (Mocas) program, and the Department of Defense military standard contract administration procedures (Milscap) project.

The communications control terminals and software to be supplied by Honeywell's EDP Division will support the Mocas system in the 11 regional DCAS headquarters.

System for Travel Agents Urged

NEW YORK – Travel agents are concerned that growing use of automation by other segments of the travel industry will encourage the traveler to forego agency services.

To overcome this, the agent must employ his own system of automation to free him from many of the time-consuming details involved in booking travel. Increased use of automation would enable him to provide professional guidance for travelers.

These were some aspects of the travel industry enumerated by Leonard Klarich, vice-president, marketing of Atar Computer Systems Inc., Canoga Park, Calif., in an address before the NYU Executive Management Program in Travel and Tourism. The Atar system, now being developed, is designed to provide required automation for the travel agent.

The agent is concerned over big consumer ads urging the public to call toll-free Wats line numbers for hotel or car rental reservations systems, continued Klarich.

"While individually, the country's 7,000 agents are small businessmen in a land of giants, the volume of business they generate for airlines, hotels, car rentals, steamships, and tours is huge," he said. Klarich estimated the volume from mid-1967 to mid-1968 to be at least $4 billion.

The agent needs a simple typewriter terminal in his office which links him instantly to the other travel industry computers. This terminal would display schedules and availability of seats on domestic and international airlines, allow sales of hotel rooms, cars, and steamships. Eventually, it would provide an accounting system, as well as high-fare computation and ticketing, he said.

N.Y. Bank to Use Dual-Page Reader System From CDC

MINNEAPOLIS – First National City Bank, New York City, will inaugurate a new method of handling its stock transfer accounting with a computer-based, dual-page reader system ordered from Control Data Corp. (CDC).

The system, which incorporates two CDC 915 optical character recognition page readers and a controlling CDC 1700, is Control Data's first DP system in the banking industry using two optical reading devices to simultaneously transmit information into a single computer for processing.

Bank officials said the system, scheduled for installation in mid-1970, could establish a new trend in the application of computer-driven optical readers for financial accounting procedures.

A key feature of the new system is its ability to balance debits and credits on every item of the stock transfer sheet, thus aiding the surrender and reissue of stocks and bonds. Previously, each item on the transfer sheet was scanned and edited during the scanning phase, and balancing required an additional step during final processing.

Contracts

Ampex Corp. has received a contract exceeding $250,000 from Varian Data Machines, Irvine, Calif., to supply high-speed core memory stacks. Ampex has also received a $200,000 contract from the Defense, Space, and Special Systems Group of Burroughs in Paoli, Pa. The contract is for additional ATM-13 digital tape drives to be used in the Cenpac system, developed by Burroughs for the U.S. Air Force.

Two contracts from General Automation, totaling approximately $400,000, have been received by Ampex to supply core memory stacks for use in a line of general purpose and automation computers.

International Data Systems (IDS) of Reno, Nev., has been awarded a contract by the business Products Division of Xerox Corp. The contract is for development of a data recorder.

Data Disc, Inc., Palo Alto, Calif., has received contracts totaling more than $3 million from Realtronics/Cybernetics, Video Systems Corp., and Kemper Engineering. The contracts are for the 7200 series disk memory.

Blundy Peripherals General has been contracted by Westinghouse Hagan System Division for its removable disk storage drive system for the Prodac 200. The contract is valued at $500,000.

Mark Computer Systems, Inc., has been awarded a contract for more than $450,000 from the Chase Manhattan Bank for a computer system to be used by the bank's Uni-Card Division.

Computer Technology, Inc., has signed an agreement with Security Bank and Trust Co., Southgate, Mich., to provide computer services for the bank's BankAmericard operation.

Time-Sharing Enterprises, Inc., King of Prussia, Pa., has received a contract from Scientific Resources Corp. for the lease of its time-sharing management decision applications.

Dataline, Inc., has been awarded a contract by Nu-Concept Computer Co. for three preproduction model card printers and three pre-production model line printers. The contract is valued at $100,000.

Hazeltine Corp. of Little Neck, New York, has received a letter contract from the Department of Defense for the development of electronic warfare equipment. When definitized, it is anticipated that this contract will approximate $240,000.

General Analytics Corp. has leased Informs, its proprietary data base management system, to Computer Command and Control Co. for use under contract to the Office of the Secretary, U.S. Department of Transportation. Upon completion of the installation phase, the system will be turned over to the Department of Transportation who will use it for various information purposes.

The Solid State Scientific Corp. has signed a $13 million contract to develop and produce a computer memory for the Viatron Computer Corp. of Bedford, Mass.

The Fairchild Defense Products ordnance facility at Copiague, N.Y., has received a follow-on contract valued at $2.5 million from the Army Material Command's Harry Diamond Labs in Washington, D.C. The contract is for continued production of M514A1E1 electronic artillery projectile fuzes.

Diversified Numeric Applications has received a contract from Lutheran General Hospital, Park Ridge, Ill., calling for the installation of an automated clinical laboratory system. The system will acquire and process medical data from both automated and manual procedures in the hospital's laboratory.

Univac Opens New Office in Japan

TOKYO, Japan – A $10 million headquarters office building for Nippon Univac Kaisha Ltd. (NUK), the Japanese marketing organization of Univac, has opened.

The new building, consisting of seven floors and three lower levels, replaces NUK's existing quarters in the Mitsui Seimei building in Tokyo. The entire new building, totaling 244,252-sq-ft of floor space, will be occupied by NUK personnel involved in administration, marketing, field engineering, and systems programming functions.

The first floor will house one of the largest computer centers in Japan equipped with Univac 1108, 418-111, 9400, 9300 and 9200 systems and a variety of Univac peripheral equipment and communications terminals. Also in the new building is a data center, information center and an education center. Construction of the new facility began in September, 1968.

The data center will engage in the research and development of time-sharing techniques, customer service, computing service and other subjects. The education center will be available for the benefit of users and other persons interested in computer techniques.

CSC Extends Time-Sharing Network to Chicago

CHICAGO – Computer Sciences Corp. (CSC) has extended its new computer time-sharing network, Infonet, to Chicago.

Expansions

CSC's Chicago computer center (at 810 Commerce Drive) in suburban Oak Brook is the third Infonet center to open since the first of the year. Centers in Washington, D.C., and Los Angeles became operational in January.

The company's plans call for a nationwide network of centers utilizing up to 20 Univac 1108 computers.

CSC will open a branch office at 111 E. Wacker Drive in Chicago in mid-April which will provide sales and technical support services to Infonet subscribers throughout the greater Chicago area.

Other Expansions

Input Data of Stirling, N.J., opened a new territorial office in the Fisher Building in Detroit, Michigan. The new facility will serve as a sales office for the Midwest.

Microfilm Applications Inc. has opened a new microfilm COM center at 914 S. Hoover St., Los Angeles. This downtown site with its COM hardware will do alphanumeric as well as graphic plotting. The center will also process rotary and planetary film work.

Ace Shielded Products Corp. of Huntingdon Valley, Pa., has established new sales, warehousing, and service facilities on the West Coast. The new facilities will be located at 509 Hindry Ave., Inglewood, Calif.

Diversified Numeric Applications of Minneapolis has started work on the second phase of its plant expansion program which will triple the firm's initial production area. Diversified Numeric Applications manufactures computer medical systems and specializes in hospital clinical laboratory systems.

Bit, Inc. of Natick, Mass. has established a worldwide sales and service organization. Five sales regions in the U.S. have been opened totally staffed by Bit personnel. Offices are located in Los Angeles, Calif., Houston, Tex., Chicago, Ill., Troy, N.Y., Ft. Walton Beach, Fla., Dallas, Tex., and Natick, Mass.

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Orders and Installations

Korvette's retail stores are now installing Addo-X Model 20-0353-32 solid state tape punch machines in 10 of their outlets around the country. Addo-X, Inc. is a New York-headquartered marketing organization for electronic and mechanical printing calculators, data collection systems and control devices, programmable paper tape punches, interfacing to key punches and optical character recognition equipment.

The first Computer Machinery Corp. keyprocessing system in the United Kingdom will be installed at Computer Data Services, London. Computer Machinery Company Ltd., the English subsidiary of Los Angeles-based Computer Machinery Corp. International, will manufacture the keyprocessing system in England for distribution throughout the UK.

The following companies have ordered Univac 9200 systems: Jack Cooper Transport Co. Inc., Kansas City, Mo.; James P. Keating Co., Sacramento, Calif.; National Valve & Manufacturing Co., Pittsburgh; Midwest Biscuit Co., Burlington, Iowa; Rugby Sportswear Inc., Buffalo, N.Y. and U.S. Dept. of Health, Education & Welfare. HEW will use its system to aid in the relocation of Cuban refugees.

United States Castor Corp., Overland Park, Kan. has installed a Univac 9200.

Univac 9200-II systems have been installed by Computer Training Schools, Inc., Atlanta, Ga., and the St. Louis Park Medical Center, Minneapolis, Minn.

The Western Division of McDonnell Douglas Astronautics is installing a Control Data 6500 system, valued at $4.8 million, in its Huntington Beach, Calif., systems center. The computer will be linked to CDC high-speed batch processing terminals located throughout the center and also will be connected to a CDC satellite batch processor at McDonnell Douglas' Santa Monica facility. The system will be used in a variety of scientific and engineering applications.

Honeywell EDP Division has signed an agreement to sell more than $1 million worth of line printers and card reader/punches to Data Computer Systems, Santa Ana, Calif.

The Electric Boat Division of General Dynamics Corp., Groton, Conn., ordered Univac systems valued at $5.4 million. A Univac 1106 has been delivered as the first increment of a staged installation program to result in multiple Univac systems, including an 1108, a 9400 and a 9300.

Cassano Enterprises, Inc., has ordered a NCR Century 100 system that will assist the firm in its multi-unit food operation. The NCR Century will be used for order billing, inventory control, control sales analysis, general applications, franchise accounting, management information with financial reporting, payroll, and accounts payable.

Webster Computer Corp., Danbury, Conn., has received orders for 14 of its DOS machine utilization reporting systems from the following companies: New England Merchants Bank, Mass.; Revlon, Inc. N.J.; Lakeview Trust & Savings, Illinois; Blue Cross and Blue Shield, Tenn.; First National City Bank, N.Y.; County of Sacramento, Calif.; H.F. Ahmanson Co.; Foremost Foods Co., Calif.; Exchange National Bank, Ill.; Bambergers, N.J.; R.L. Polk & Co., Mich; Union Mutual Life Insurance Co., Maine; Converse Rubber Corp., Mass.; and Mobil Oil Corp., N.Y.

"I Hoid You Might Be Innerestid in a Massive Number Crusher."

Getty Oil Buys CDC 1700 System To Control Processing in 3 Units

DELAWARE CITY, Del. – Getty Oil Co., a diversified international energy company with headquarters in Los Angeles, has ordered a Control Data Corp. (CDC) 1700 computer system to control processing in three major units of its 140,000-barrel/day refinery at Delaware City, Del.

The CDC 1700 computer system will scan, log, and alarm instrument points for the crude unit, the fluid catalytic cracking unit, and the fluid coker: it will answer more than 1,600 signals from the units, the company said.

The crude unit through distillation separates crude oil into various fractions requiring further processing. The coker converts the heavy residual material from the crude unit into lighter products and fluid coke. The catalytic cracking unit, or cat cracker, processes the next heaviest oil at high temperature and in the presence of certain catalysts converts heavy gas oil into lighter fluids, primarily gasoline.

The CDC 1700 computer system will be installed in April, 1970.

In addition to its scan, log, and alarm functions, the computer will control some operating points on each unit. A conversion device, called Scanivalve, between the computer and the three refining units will act as a multiplexor, changing air signals from the units into electrical signals and channeling the signals into the computer.

Special software to meet processing requirements is being written by Control Data.

Acquisitions

Cyclops, Corp., Pittsburgh, Pa., has agreed to purchase the entire stock interest in **Detroit Steel Corp.**, owned by American Export Industries, Inc. The transaction involves 791,794 shares, or about 19% of Detroit's common stock. The price for American Export will be $12 million cash, a note for $5 million, and 10-year warrants to purchase 150,000 shares of Cyclops common stock at $46 per share.

Intranet Computing Corp. has acquired the **Data Systems Division** (DSD) of Datametrics Corp., Van Nuys, Calif. The DSD of Datametrics develops and manufactures interface equipment.

Bergstrom Paper Co., Neenah, Wis., has acquired the consulting services and proprietary software product assets of Information Management Inc. (IMI), San Francisco. IMI is involved with Cobol computer consulting activities and programs.

University Computing Co. has acquired **Computer Composition Co.**, a Dallas graphic arts service specializing in computerized typesetting.

Pharos Systems Inc., Bethesda, Md., has acquired **Justice Management and Systems Technology (JMST)** of Anaheim, Calif. JMST has corporate experience in all phases of consulting activities and has an advisory board of senior personnel which is actively involved in the law enforcement, corrections, and court fields.

Academy Computing Corp. has agreed in principle with **Data Network Corp.**, New York, to acquire Com-Tel Network Corp., a Dallas-based time-sharing marketing subsidiary of Data Network.

An agreement in principle has been reached for **Communications Properties, Inc.** of Austin, Texas, to acquire **West Texas Microwave Co.** (WTMC). WTMC is a common carrier microwave system serving community antenna television systems in Texas.

Electronic Assistance Corp. has completed the purchase of an 80% interest in Auto-Trol Corp. (ATC) Denver, Colo. ATC manufactures digital graphic and data systems.

Computer Sharing, Inc., Bala Cynwyd, Pa., a subsidiary of Scientific Resources Corp., and **Data Network Corp.**, New York, have reached an agreement in principle for a merger of the two corporations, each of which is engaged in providing computer time-sharing facilities and services. It is presently contemplated that each share of common stock of Computer Sharing would become one share of common stock of Data Network which would become about 1.5 shares of common stock of the merged corporation.

Computer Investors Group Buys Canadian Subsidiary

LARCHMONT, N.Y. – Computer Investors Group (CIG), Inc. has announced that its subsidiary, CIG International Capital Corp., New York, has purchased for cash the 50% interest in Computer Investors Group of Canada Ltd., owned by Great Universal Stores of Canada Ltd.

Prior to the purchase, Carl H. Freyer, president, said CIG and Great Universal Stores of Canada each owned 50% of the Canadian company, a leasor of computers in Canada.

According to Freyer, the acquisition of Computer Investors Group of Canada, which now becomes a wholly owned subsidiary, broadens the base of Computer Investors Group's international computer-leasing operations.

The Canadian subsidiary's rental income is currently at an annual level of $900,000 and operations are profitable, Freyer said.

Computer Investors Group, Inc. is an internationally oriented company engaged in the leasing of computers and the sale of computer products, with subsidiaries in West Germany and Italy, and affiliates in the United Kingdom and Canada.

The company recently undertook an industrial diversification program into the metal oxide semiconductor area and is currently completing a design and manufacturing facility outside of the Philadelphia area.

Airline Computer Is Busy

MINNEAPOLIS, Minn. – North Central Airlines has inaugurated a computer reservations system. Called Escort, the $8 million complex not only provides instantaneous flight reservations, but tells agents whether connecting flights of 21 other airlines are open. The system also functions as a weather bureau for pilots.

Backe to Run Imlac Operations

WALTHAM, Mass. – Bruce Backe has been promoted to president and chief executive officer in charge of overall operations and marketing of Imlac Corp.

Backe joined Imlac as vice-president of operations and was promoted to executive vice-president. Prior to joining Imlac he was vice-president, administration, for Barry Controls, a division of Barry Wright Corp. He rose from project engineer to a succession of positions: administrative engineer, manager of the special products department, director of manufacturing, controller, and then to vice-president, administration.

Backe graudated from MIT with a B.S. in mechanical engineering and industrial management.

Executive Corner

Bridge Data Products Names Davis V.P.

PHILADELPHIA – Cecil J. Davis has been named vice-president in charge of engineering by Bridge Data Products, Inc.

Davis will be responsible for the design, development, and manufacture of computer peripheral equipment. He is presently directing all engineering and manufacturing operations associated with the company's newly introduced multiple-card reader.

He is also involved in the development of a mountable desk-top card reader, data recorder (keypunch), and a card sorter for the new IBM System/3 card.

Prior to joining Bridge Data Products, Davis was manager of design and development engineering at Control Data Corp., and was with the advanced development EDP Division of RCA.

He received a B.S. in mechanical engineering from Texas Tech., and did post-graduate work at Drexel Institute of Technology.

Other Moves

■ Robert Pierson has been named president and chief executive officer of Carterfone Communications Corp., Dallas. Pierson came to the U.S. in 1958 after graduation from the University of Liege, Belgium. He has a master of science degree from the University of California.

■ Com-Share, Inc. has promoted Laurence F. Byrnes to vice-president, marketing, and Frederick E. Paul to vice-president, operations. Byrnes joined Com-Share's staff in early 1968 coming from GE. Paul joined in late 1967 as manager of the company's eastern computer center.

■ Remcom Systems has elected Robert G. King vice-president of finance, and Donald R. Fagin vice-president, industrial relations and administration.

■ Robert F. Lutz has been elected a vice-president of Computer Memory Devices, Inc.

■ Edgar L. Van Cott has been named vice-president for engineering and manufacturing at Devonshire Computer Corp., Newton, Mass. He is responsible for design and production of the company's special-purpose communications computers.

■ A.T. Kearney & Co., Inc., Chicago, has elected three new vice-presidents: Lester K. Kloss, Robert J. Mayer, and Paul Schneider.

■ Joseph W. Rooney has been appointed division vice-president, marketing, by RCA Computer Systems Division. Rooney is responsible for all commercial and government marketing and sales activities for RCA's computer operation including new business programs, marketing planning, and advertising.

■ Charles J. Holloman, vice-president for research and development, Trans-Lux Corp., has been appointed vice-president in charge of engineering and operations. Holloman is responsible for all plant operations from research through production.

■ Irwin D. Baumel has been elected president and chief operating officer of Synergistics, Inc. He joined the firm last year after 19 years of research, development, product engineering, and marketing experience in the fields of communications and computer data systems.

■ Jack James has been appointed vice-president of finance for Telex Computer Products Division.

■ William G. Edwards has been appointed president of United Data Processing, Portland, Ore. He has been with UDP since 1967 when he joined the firm as controller. He has since been promoted to vice-president and general manager.

COMPUTERWORLD

EDPeople

Brattebo Named Director of Marketing Development for Univac Data Processing

BLUE BELL, Pa. – Howard C. Brattebo has been named director of market development for the Univac Data Processing Division.

In his new position, Brattebo is responsible for industry marketing growth. This includes programs in such fields as airlines, education, medical information systems, state and local government, financial systems, and public safety in addition to market research and market services.

He also directs Univac's Marketing Education and Graduate School Program which enables employees in all Univac divisions to obtain advanced education.

Brattebo was formerly Southwestern Regional Manager for the Data Processing Division. Other previous positions with the company were: branch manager in Atlanta (1965-68), branch manager in Tulsa (1960-65), and salesman in Des Moines (1955-60).

Brattebo graduated from the University of Northern Iowa in 1952 with a B.A. degree in education, and did graduate work in education at the University of Iowa and Iowa State University.

Position Announcements

Randolph Appoints Three Executives

GREENWICH, Conn. – Randolph Computer Corp., an international computer leasing and data processing services company, has undergone several executive changes.

Nathan Snyder has been named executive vice-president; Frederick Lohrum has been appointed vice-president, midwestern region; and William Landis has been named vice-president.

Snyder joined the company in 1966 as corporate counsel and since that time has held positions of secretary, vice-president, and chief counsel.

Snyder is a graduate of Harvard College and Columbia Law School.

Lohrum, formerly president of the Computer Systems Division of Randolph Data Services as well as corporate vice-president of Randolph Data Services, will be responsible for the midwestern region with offices in Cincinnati, Ohio.

Prior to joining Randolph Computer in 1968, he was with IBM from 1955-1968 in the Data Processing Division.

Landis, formerly vice-president of a subsidiary, Randolph Equipment Corp., will be responsible for marketing operations in the East and Canada.

Prior to joining Randolph Computer in 1968, he spent 10 years with IBM in both marketing and management positions, as well as Data Processing Division headquarters staff assignments.

Landis has an engineering degree from Villanova University and a master's degree from the Wharton Graduate School of Business Administration, University of Pennsylvania.

Perkins Chosen Vice-President Of Colorado Instruments, Inc.

BROOMFIELD, Colo. – Denver business executive Charles M. Perkins has been named executive vice-president and general manager of Colorado Instruments, Inc., manufacturer of peripheral computer equipment. Perkins has also been elected to the company's board of directors.

Prior to joining Colorado Instruments, Inc., Perkins was vice-president and general manager of the Test Instruments Division, Honeywell, Inc., in Denver. He joined Honeywell in 1950 and has served in various operational management capacities, including director of engineering of the Aeronautical Division in Minneapolis, Minn.

Perkins received his B.S. in electrical engineering from Cornell University, Ithaca, New York, and his M.E.E. from New York University.

Colorado Instruments manufactures various data collection systems to work with many different computers for industry, government, and educational institutions.

R.L. Gault Named Vice-President Of Information Systems Marketing

SAN FRANCISCO – Robert L. Gault has been appointed vice-president/marketing for Information Systems Management Corp. (ISM) of Richland, Washington.

ISM is a Western Operations, Inc. subsidiary which designs and develops data management systems that automate the tasks of computer systems design, program design, coding, and testing.

Gault will be responsible for establishing a nationwide marketing program for ISM's "Series" data management system, including the establishment of sales offices in principal cities throughout the U.S.

Gault was previously director of marketing for Western Operations and prior to that, manager of plans and programs in the Northwest for Computer Sciences Corp.

He also was national director of marketing for Service Bureau Corp. in New York.

Regan Elected Spiras Systems Operations VP

WALTHAM, Mass. – James T. Regan has been elected vice-president in charge of operations at Spiras Systems, Inc.

Spiras, an affiliate of USM Corp., is a leading supplier of computer-based systems and components for science, business, and industry.

Regan is also a member of the Spiras Systems board of directors. As treasurer and vice-president in charge of operations, he is responsible for corporate financing and manufacturing operations.

Prior to joining Spiras, Regan was employed as business manager for Sylvania Communications Systems Lab.

Regan received his B.A. from Suffolk University and his LL.B from Suffolk University Law School. He is a member of the Massachusetts Bar Association.

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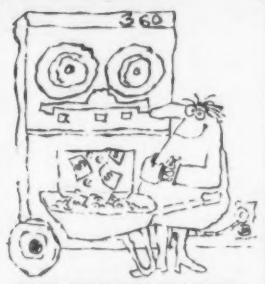

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Earnings Reports

TECHNITROL INC.
Year Ended Dec. 31

	1969	1968
Shr Ernd	$.40	.....
Revenue	13,100,000	$8,895,736
Earnings	550,000	a135,980

a-Loss.

MARSHALL INDUSTRIES
Nine Months Ended Feb. 28

	1970	1969
aShr Ernd	$.99	$.34
Revenue	19,648,600	16,839,200
Spec Cred	b355,200	.....
Earnings	c1,242,900	291,500

a-Based on income before special credit. b-Resulting from income tax reduction from loss carry-forward and from gain on sale of partnership interest. c-Equal to $1.38 a share.

SYSTRON-DONNER CORP.
Six Months Ended Jan. 31

	1970	1969
Shr Ernd	$.49	$.41
Revenue	16,243,000	12,906,000
Earnings	754,000	618,000

DATATAB INC.
Year Ended Dec. 31

	1969	a1968
bShr Ernd	$.13	$.41
Revenue	3,437,882	2,388,554
Spec Cred	43,646	.....
Earnings	c116,043	173,549

a-Restated to include operations of Tabulating and Data Processing Corp. on a pooling-of-interests basis; b-Based on income before special credit; c-Equal to 20 cents a share.

CCI CORP.
Three Months Ended Jan. 31

	1970	1969
Shr Ernd	$.01	$.20
Revenue	20,125,000	23,198,000
Earnings	58,000	817,000
9 Mo Shr	.21	.61
Revenue	62,928,000	78,502,000
Earnings	899,000	2,551,000

CTC COMPUTER CORP.
Year Ended Dec. 31

	1969	1968
Revenue	$3,724,000	$373,000
Loss	810,168	260,000

DATA 100 CORP.
Year Ended Dec. 31

	1969	a1968
Revenue	$731,018	.....
Loss	919,068	.....

a-Comparable figures not available; company was formed Dec. 4, 1968.

SUPERIOR COMPUTER CORP.
Year Ended May 31

	a1969	1968
Revenue	$936,772	$633,087
Loss	214,604	129,475
b6 Mo	.....	
Revenue	1,416,069	266,382
Loss	4,571	33,019

a-Superior Electronics was included for two months ended May 31, 1969, resulting in an increase in sales by $424,888 and decrease in loss by $7,071. b-Six months ended Nov. 30. c-Unaudited.

AUTOMATION SCIENCES INTERNATIONAL CORP.
Six Months Ended Jan. 31

	1970	1969
aShr Ernd	$.25	$.14
Revenue	1,758,873	1,032,719
Earnings	280,659	139,793

a-Based on the average number of shares outstanding during the period.

DATASCAN, INC.
Year Ended Dec. 31

	1969	1968
aShr Ernd	$1.26	$.87
Revenue	10,308,207	3,053,691
Earnings	437,952	241,766

a-Assuming full dilution, earnings per share were $1.21 in the 1969 period and 87 cents in the 1968 period based on average number of shares outstanding during those periods after giving retroactive effect to the pooling of interests in 1968.

STANDARD REGISTER CO.
Year Ended Jan. 4

	1970	a1968
Shr Ernd	$2.05	$1.30
Revenue	103,622,182	91,957,141
Earnings	4,401,968	2,802,577
14 Weeks Shr	.67	.58
Revenue	27,838,410	25,902,574
Earnings	1,430,925	1,247,812

a-52 weeks.

TECHNALYSIS CORP.
Year Ended Dec. 31

	1969	1968
Shr Ernd	$.09	.....
Revenue	669,232	$263,067
Earnings	49,715	a796

a-Loss.

PROGRAMS & ANALYSIS INC.
Year Ended Nov. 29

	1969	a1968
Revenue	$939,284	.....
Earnings	1,802	.....

a-The company was formed in June, 1968.

COMPUTER DYNAMICS INC.
Year Ended Dec. 31

	1969	1968
Shr Ernd	a$.13	$.07
Revenue	1,138,000	602,129
Op Cost	1,230,000	484,776
Earnings (Loss)	(121,700)	59,553

DATA PACKAGING CORP.
Three Months Ended Feb. 28

	1970	1969
aShr Ernd	$.18	b$.13
Revenue	4,148,101	3,041,042
Earnings	289,891	211,609

a-Average common and common equivalent shares; b-Adjusted to reflect two-for-one stock split in June, 1969.

CSI COMPUTER SYSTEMS
Year Ended Feb. 28

	1970	1969
Revenue	$1,125,104	$573,909
Loss	111,120	198,368
3 Mo	.....	.....
Revenue	349,295	167,196
Earnings	2,440	a76,421

a-Loss.

INTERNATIONAL TIME SHARING
Three Months Ended Feb. 28

	1970	1969
Revenue	$443,388	$132,723
Loss	123,157	338,747
9 Mo Rev	1,047,790	236,499
Spec Cred	a800,000	.....
Earnings	b110,446	c868,506

a-From sale of time-sharing software to Control Data Corp. in Nov. 1969; b-Equal to six cents a share; c-Loss.

WYLE LABORATORIES
Year Ended Jan. 31

	1970	1969
aShr Ernd	$.31	b$.78
Revenue	101,593,000	71,378,000
Spec Cred	c174,000	.....
Earnings	d1,281,000	2,655,000

a-Based on income before special credit; b-Adjusted for two-for-one stock split in March 1969; c-From sale of Visioneering-Bunell Co.; d-Equal to 36 cents a share.

COMPUTER INVESTORS GROUP, INC.
Three Months Ended Dec. 31

	1969	1968
Shr Ernd	$.12	$.09
Revenue	2,029,624	1,332,293
Earnings	233,165	163,031
9 Mo Shr	$.32	$.23
Revenue	5,447,252	3,291,783
Earnings	604,711	394,035

ENNIS BUSINESS FORMS
Year Ended Feb. 28

	1970	a1969
bShr Ernd	$.95	c$.83
Revenue	41,667,059	32,848,326
Spec Cred	d60,543	.....
Earnings	e2,329,687	1,963,971

a-Restated to reflect acquisitions on a pooling-of-interests basis; b-Based on income before special credit; c-Adjusted to reflect a 100% stock distribution in Dec. 1969; d-Proceeds from life insurance; e-Equal to 97 cents a share.

FARRINGTON MFG. CO.
Year Ended Dec. 31

	a1969	1968
Shr Ernd	.....	$.06
Revenue	33,000,000	30,000,000
Loss	2,500,000	b324,000

a-Preliminary; b-Income. The report notes that the 1969 loss was attributed principally to inventory adjustments and differences.

INT'L SYSTEMS & CONTROLS
Year Ended Dec. 31

	1969	1968
aRevenue	$80,400,000	$77,400,000
Spec Cred	b2,078,000	c1,950,000
dEarnings	1,038,000	1,214,000

a-Excludes revenues of discontinued or sold operations; b-Gain on sale of discontinued operations; c-Gain on sale of securities and the company's oil field division; d-Equal to 60 cents a share in 1969 and 99 cents in 1968.

DATA ARCHITECTS INC.
Year Ended Dec. 31

	1969	a1968
Shr Ernd	$.06	b$.01
Revenue	3,505,813	2,845,135
cEarnings	100,424	79,062

a-1968 figures are recast to reflect acquisitions on a pooling of interests basis; b-Fully diluted; c-Before taxes.

EFFICIENT LEASING CORP.
Year Ended Aug. 31

	1969	1968
aShr Ernd	b$.54	$.17
Revenue	14,413,737	7,018,028
Earnings	1,933,675	880,240

a-After extraordinary charge; b-Loss.

COMPUTER PREPARATIONS, INC.
Nine Months Ended Jan. 31

	1970	a1969
Shr Ernd	a$.31	.....
Revenue	1,270,864	.....
Earnings	b102,891	.....

a-Figures for comparable 1969 period not available; b-No provision is required for federal income taxes as a result of tax loss carryforward from prior year; c-Based on 327,200 shares outstanding.

Disk Pack Delivered

Alan Hochschild (right), president of Western Operations, Inc., delivers a disk pack containing a System '70 mutual fund system to Colin R. Ellison of Sage Holding Ltd., South Africa. The system is presently being used by 10 mutual fund management companies.

Demise of Speedata Could Affect E.B.S. DP 'Health'

By Drake Lundell
CW New York Bureau

NEW YORK – After compiling losses in excess of $17 million since its founding, the Speedata, Inc. subsidiary of Computer Applications Inc. (CAI) has been allowed to die and the move could spell trouble for another CAI subsidiary, E.B.S. Data Processing Inc.

Announcement of the Speedata closing was made after separate meetings by the board of directors of Speedata and Computer Applications, which owned 80.6% of Speedata.

Computer Applications had invested about $16 million in Speedata over the past five years. An additional $1.2 million was added by outside investors.

Spokesmen for CAI indicated that the firm could not raise the financing needed to complete the development costs associated with its subsidiary although "exhaustive efforts" had been made to obtain the needed additional capital.

Operating Loss

In its last fiscal year, ended Sept. 30, 1969, CAI reported an operating loss of $6,724,000 of which $5,123,000 were costs associated with the Speedata operation.

The total loss of the 1969 fiscal year after write-off of intangibles, loss from the discontinued New Era Lithograph Co., Inc. operation, and the provision for loss from the discontinuance of that operation amounted to $9,596,000 or $6.02 a share, CAI said.

In the first quarter of the 1970 fiscal year the firm showed a loss of $2,189,000, including $1,829,000 of Speedata costs, for continuing operations. The firm, however, managed to show a profit during the first quarter of $1,093,000 due to an extraordinary item of $3,282,000 resulting from the sale of 18% of the common stock of E.B.S. Data Processing, Inc.

Investors in E.B.S., however, may be unhappy with the closing of Speedata, because Speedata accounted for almost 30% of the $12 million in E.B.S. data processing revenues in fiscal 1969.

With the loss of the Speedata account, E.B.S. revenues may be off by as much as $4 million, even though CAI spokesmen said that they hoped to generate enough business to make up for the Speedata loss.

"Almost all" of the approximately 200 Speedata employees have been discharged, CAI said, and the firm indicated that the facilities of E.B.S. would probably have to be "adjusted to reflect the reduced level of operations" caused by the immediate loss of the Speedata account.

Speedata Operations Shown

The Speedata service was a national grocery movement information service based on warehouse withdrawals. About 300 warehouses in 30 marketing areas forwarded primary information on consumer products to Speedata on a weekly basis.

Speedata then processed the information into single product categories and sold it to subscriber manufacturers of the respective products. At the height of its operations it processed about eight million bits of information weekly.

The reports to manufacturers provided information on each specified category for the market area in which it was sold. A client received a complete schedule of data for all items within his product category and for each market area in which he was interested.

Levin-Townsend, Boothe May Merge Into Largest Lease Firm

NEW YORK – Two of the top 10 computer leasing companies may merge to form what would be the largest leasing firm in the U.S.

Levin-Townsend Computer Corp. and Boothe Computer Corp. have signed a letter of intent to negotiate for consolidation of the two companies. Any merger depends on Levin-Townsend's finding a solution to its severe financial problems and surviving Howard S. Levin's proxy fight to regain control of the company.

In a joint announcement, the two companies said that if an agreement is made the two companies would exchange stock according to the ratio of their net worths, after "appropirate evaluation" of their assets and after making Levin-Townsend's accounting methods the same as Boothe's.

$160 Million

Levin-Townsend owns about $160 million of IBM computer equipment while Boothe owns about $185 million.

Levin-Townsend has an overdue debt of $11.2 million to IBM for installment purchases of computers. IBM has extended the deadline for repayment to April 17. Levin-Townsend has said it is seeking $20 million in new financing.

Levin, cofounder, and until Jan. 16, chief executive officer of Levin-Townsend, has threatened a proxy fight at the July annual meeting. He has also sued the company, contending that his firing was illegal.

An "absolutely essential part" of the proposal is a "reasonable basis for solution of Levin-Townsend's problems, according to D.P. Boothe Jr., chairman of Boothe Computer.

"The principal thing was to see whether it made any sense to put the companies together. Their portfolios are quite parallel – domestically they're about the same. Obviously, we could combine the general computer leasing activities and effect the saving of consolidation" Boothe said.

Boothe said he would expect to be chairman and chief executive officer of the combined firm.

$15.9 Million Net Loss

In its last report, Levin-Townsend posted a $15.9 million net loss on revenues of $48.9 million for a nine-month period. The loss included substantial write-offs of unprofitable investments.

Boothe's first leasing company was acquired by Greyhound Corp. and became G.C. Computer Corp.

Until 1966, Levin-Townsend was a computer leasing agent for Greyhound. Boothe, at that time, managed Greyhound's leasing operations, and was a Levin-Townsend director. The arrangement was broken off in October, 1966, as a result of a dispute between the companies that was not settled until April, 1967, shortly before Boothe left Greyhound is another disagreement.

Boothe then founded Boothe Computer in late 1967.

Control Data Net Gets Downward Projection

MINNEAPOLIS – Battered by tight money and slender government research and defense budgets, Control Data Corp. (CDC) has warned that it expects a "substantial" loss from computer operations.

In February William C. Norris, CDC president and board chairman, had forecast that computer earnings in the first half would experience "sharp" reductions. The company has now reduced even that gloomy prediction.

The company statement attributed the loss to reduced shipments of large-scale computers in the U.S. The cause of this, CDC said, was reduced government expenditures, inflation, and the uncertain economic outlook.

Other areas of business do look favorable, the firm said, citing overseas sales, other equipment sales, educational services, and the activities of its financing subsidiary, Commercial Credit Co.

The company has been effecting cutbacks. In March it announced it was phasing out its Melville division, cancelling plans to build a new plant in Tucson, and informed sources say the company layed off at least 750 of its 15,000 employees in the Twin Cities area.

Early in the year, CDC had announced to its 37,000 workers that the company planned sharply reduced budgets in the coming year, and an almost total freeze on new capital spending.

Itel Confident of Division Turnaround

SAN FRANCISCO – Itel Corp's newly acquired subsidiary, Intercontinental Systems, Inc., should register a profit turnaround "sometime about mid-year" according to Itel President and chief executive, Peter S. Redfield.

Though Redfield did not make any specific forecast of Intercontinental performance, he did say Itel expected it "to contribute to Itel earnings for the year." In 1969, Intercontinental had a net loss of $2.6 million after $568,000 special credit, and it registered a $1.6 million loss in 1968, after a special charge of $215,000.

Itel acquired Intercontinental early this month in an exchange of stock.

Intercontinental "will be announcing new products within the next three months and plans to discontinue some other products later this year," Redfield said. The new products will be connected with word-processing, automated typewriters, and will be in the "same price range" as Intercontinental's current line of data handling equipment, the president noted.

Redfield refused to make a specific projection of Itel's 1970 earnings, but supported his November statement that prospects for improved earnings this year are "very good."

In 1969 Itel had revenues of $40.4 million and earnings of $3.3 million, or 86 cents a share.

The recent reduction of the prime interest rate should have a "very favorable" impact on earnings. "It should increase our after-tax profits by $50,000 a month," Redfield said.

As a computer equipment and transportation lessor, Itel is sensitive to interest rate changes.

Redfield also said that Itel had made some changes in Intercontinental management and that more were possible, but added that "we are very pleased with the present management team."

He added that Intercontinental has instituted a new quality control program at the company's plant in Greeley, Colo. Concern over the quality of products made there has been a problem in the past, he said.

Wang Expects Drop in 3rd Quarter

TEWKSBURY, Mass. – Dr. An Wang, president and treasurer of Wang Laboratories, Inc., has revealed that preliminary indications show that sales and earnings for the third quarter ended March 31, 1970, will be lower than third quarter results for 1969.

Wang stated that the principal reason for the lower figures was marketing costs for its new Model 700 programmable calculators and related equipment, but that substantial deliveries of these products had begun only in recent weeks.

The president reported that he was optimistic about fourth quarter and year-end results. He noted that incoming orders were substantially ahead of last year and that the company was now at full production of the Model 700 calculators. The combination of these factors should result in record fourth-quarter sales, he predicted.

The company's regular quarterly report will be issued by the end of April.

Room for One Survivor in Ticket Reservation Business

By Phyllis Huggins
CW West Coast Bureau

LOS ANGELES – On April 3, Computer Sciences Corp. (CSC) announced "with considerable regret" that it was withdrawing from the ticket reservation business. The statement included the facts that CSC had invested about $13 million in unrecoverable capital in its Computicket operation and that recent forecasts indicated it would take another $10 to $12 million before the profitability point could be reached.

Computicket was a majority-owned subsidiary of CSC.

This was interpreted by industry observers as a blow to consumer-oriented applications of computers and, as CSC stated, that the money Computicket would require would be better applied to its time-sharing network, Infonet, as another indication of the capital draining power of time-sharing utilities.

For the past year, CSC has been attempting to sell Computicket in at least the manner in which it unloaded Computax, its income tax processing service, with a buyer taking 51% of control. But there were no takers. The drain on the company was such that in December, 1969, CSC cut the staff by a third.

$500,000/mo

CSC entered the reservation business in 1968 and reliable industry sources put its overhead in 1969 at $500,000/mo with revenues for the whole year at little more than $50,000.

Most of the sales to date were made up of small buyers – rodeos, swim meets and the like.

The big users waited and watched.

Last year, Computicket contracted with the national parks and campsites, and on opening day, this February, it did business in excess of $50,000, more than the gross for the past year. On April 3, at a meeting of all the sports promotors in San Diego, Computicket was given all of the San Diego business. And an hour later the news was out that it was out of business.

Insiders felt that CSC was on the verge of succeeding by beginning to bring in some big accounts. However, CSC knew when it started, and the same opinion is shared by the remaining company in the ticket reservation business, Ticketron, that there would be only one survivor. The cost of equipment and communications lines is such that only one profit-making company can be supported.

Ticketron, the survivor, was formed in 1965 and is still losing money. President J.C. Quinn said it expects to be profitable in mid-1971. Current volume is one million tickets/mo with a goal of 75 million/yr. Break-even point, he said, is 40 million/yr.

Quinn pointed out that the total volume in entertainment tickets alone is 500 million tickets/yr. This excludes transportation tickets, car rentals, and other avenues of revenue.

Ticketron recently signed up to handle tickets for the Metroliner, the Penn-Central's crack train serving Washington, D.C. and New York. It is also negotiating with Hertz and moving into other broader-based areas of reservation services.

Price Cutting

Price cutting on large accounts hit the ticket reservation business as it has others. One example, cited by an industry source, was a bid for Computicket for the Ontario Motor Speedway business. It bid at 17 cents a ticket and figured it was losing money. Ticketron came in at three cents a ticket.

CSC uses IBM 360/40s while Ticketron uses CDC 1700 series computers. "We are firm believers in minicomputers," said Quinn. "Our costs are one-third of anyone else's."

The evidence still points to price-cutting, however.

Ticketron has already picked up many of CSC's customers. When asked if it was buying the contracts, Quinn answered: "There is nothing to buy. This is a very fragmented industry. CSC, as I understand it, just vacated the field."

CSC had its back against the wall. The best evidence of penetration of the business is the number of terminals in the field. Ticketron has 900 with 600 yet to be installed. Estimates of CSC's terminal saturation range from 50 to 200.

The result of all this is that Wall Street is now sharpening its knives for CSC as representatives of grandiloquent erroneous claims by the computer industry. And Ticketron is much closer to realizing the benefits of what has been a long, hard pull, a pull that it appears any consumer-oriented business will have to go through – that of waiting it out until the public begins to accept new methods of doing business.

Informatics to Sell L.A. DP Center, Form Subsidiary

SHERMAN OAKS, Calif. – Confronted with a $1.6 million net loss for the last nine-month period, Informatics, Inc. is selling a major portion of one of its three West Coast data processing centers, and is reorganizing the other two into a new subsidiary called Informatics/Management Computer Services (I/MCS).

Dr. Walter F. Bauer, Informatics president, said Peninsula Tabulating Services, Inc., a subsidiary of E.B.S. Data Processing and Computer Applications, had reached an agreement in principle to buy the Los Angeles Data Center in El Segundo. The Valley Data Center in Sherman Oaks and Data II in Oakland will be merged into I/MCS "with major changes in policy and direction."

Informatics' Dataplan subsidiary in New York will not be affected, Bauer noted.

Informatics posted a $202,000 net loss for this quarter, as well as a $1,479,000 write-off for the data centers.

Informatics purchased the Los Angeles Data Center and Data II from the Rucker Co. of Oakland. Though the two had been posting losses, Informatics had hoped that they would mesh with the Valley Data Center to take advantage of what seemed to be a booming aerospace industry in the Los Angeles area. Informatics bought the two early in fiscal 1969.

"We have concluded that our approach to data services in Los Angeles should be drastically modified in view of the severe price competition experienced in the area and the distressed business picture stemming from a weakened aerospace industry," Bauer said.

Aim for Larger Contracts

I/MCS will no longer solicit piecemeal business, a company spokesman said. The subsidiary will aim in the future for larger contracts where it can take over a client's entire EDP needs.

The small business will be transferred to Peninsula Tabulating. General data service will continue at Oakland, however, "where our experience has shown a better market exists, as reflected in the financial performance of our center there," Bauer added.

Bauer had stated previously that Informatics' goal was to "achieve break-even or modest loss operations in the data centers by the second quarter of fiscal 1971."

The company explained that it had been running into heavy competition from the number of data processing centers fighting for Los Angeles business.

Systems Engineering Labs Reports Record Earnings, Merger Prospects

FORT LAUDERDALE, Fla. – Systems Engineering Laboratories, Inc. has posted record high consolidated revenues and earnings, for the 36-week period which ended, March 6, of $14, $430,000 and $1,253,000 or 55 cents a share, according to S. P. Eglash, company president.

This represents an increase in revenues of 30% and net income of 37% over the first three quarters of last year.

For the corresponding period a year ago, Systems recorded revenues of $11.1 million and net income of $912,000 or 44 cents a share.

Formal Agreement

During the third quarter, the boards of directors of Systems and Spectral Dynamics Corp. of San Diego approved a formal agreement whereby Spectral would merge with Systems and operate as an independent subsidiary. Shareholders of both companies will vote on the merger agreement at stockholders meetings in San Diego and Fort Lauderdale April 23.

Five-Eighths of a Share

Under terms of the agreement, spectral shareholders will receive five-eighths of a share of Systems common stock for each share of Spectral's outstanding common stock.

According to Eglash, "The merger agreement extends Systems capabilities to instrumentation and Spectral's capabilities to computer systems. Spectral's primary business is production and vibration testing equipment. A good portion of our computer Systems market continues to be automating production tests. This market is expanding rapidly to include more interaction between instrumentation equipment and computers to create flexible, integrated testing systems."

A Systems spokesman revealed that the merger involves more than 250,000 Systems shares, or over $9 million.

Data General Quarter Earnings Hit 11 Cents on Climbing Sales

SOUTHBORO, Mass. – Data General Corp. has reported that sales for the 12-week period ended March 14, 1970 totaled $1,413,000 and pretax earnings for the period amounted to $219,000, or 11 cents a share.

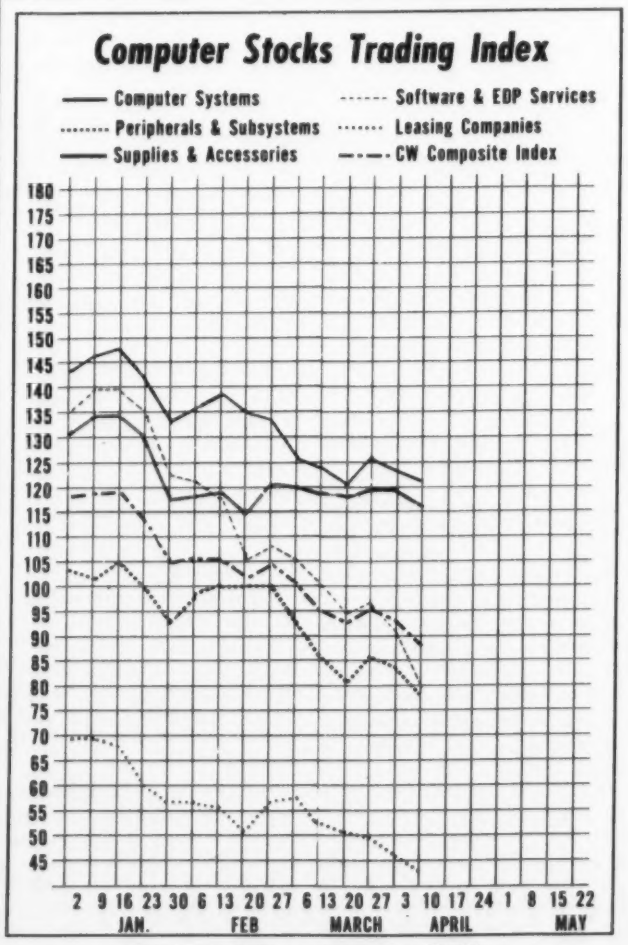
Data General had earlier reported first quarter sales of $1,115,000 and pretax earnings of $88,000 or five cents a share.

Data General said that its sales for the first half of the current year totaled $2,528,000, more than double the $1,034,000 in all of fiscal 1969. Pretax earnings for the 24-week period ended March 14 amounted to $307,000, equal to 16 cents a share.

Announcing the results of the second quarter, Data General President Edson de Castro said: "Company sales and profits were both up sharply during the second quarter. The company has now delivered more than 400 Nova computers with their related peripherals, and we expect that the introduction of high-level programming languages for our computers will strengthen our position in the growing market for small computers."

De Castro also said that first deliveries of Data General's Supernova are expected within the next few weeks, as the company expands its headquarters space from 30,000 to 70,000 sq. ft.

Data General began business in April 1968, and first offered its shares to the public on Nov. 19, 1969.



Computerworld Stock Trading Summary

NEW YORK AND AMERICAN STOCK EXCHANGE CLOSING PRICES, FRIDAY, APRIL 10; OVER THE COUNTER AND NATIONAL STOCK EXCHANGE, THURSDAY, APRIL 9

SUPPLIES & ACCESORIES

EXCH	1970 RANGE	CLOSING PRICE		WEEK NET CHANGE	WEEK PERCENT CHANGE
O	46- 35	45 3/4	ACME VISIBLE	+ 1/2	+ 1.10
N	15- 11	11 7/8	ADAMS-MILLIS CORP	- 1/4	- 2.06
O	21- 16	16	BALTIMORE BUS FORM	- 1/2	- 3.03
A	25- 11	11 7/8	BARRY WRIGHT	- 1 1/4	- 9.52
A	35- 25	25	DATA DOCUMENTS	- 2 3/4	- 9.91
N	19- 14	16	ENNIS BUS. FORMS	- 1/8	- 0.78
N	166-106	115 5/8	MEMOREX	- 1 3/8	- 1.18
N	114- 99	103 1/2	3M COMPANY	- 2 7/8	- 2.70
O	38- 34	37 5/8	MOORE BUS FORMS	- 1/4	- 0.66
N	43- 31	32 1/2	NASHUA CORP.	- 2 3/8	- 6.81
O	48- 42	43	REYNOLDS & REYNOLD	- 1 3/4	- 3.91
O	30- 26	28 1/4	STANDARD REGISTER	- 1/2	- 1.74
N	39- 33	34 1/4	UARCO	- 1 1/4	- 3.52
A	30- 15	17 3/8	WABASH MAGNETICS	- 1 1/4	- 6.71
O	41- 36	39 1/4	WALLACE BUS FORMS	- 1/4	- 0.63

COMPUTER SYSTEMS

EXCH	1970 RANGE	CLOSING PRICE		WEEK NET CHANGE	WEEK PERCENT CHANGE
N	172-129	141	BURROUGHS CORP	- 3 1/8	- 2.17
N	37- 20	25 1/4	COLLINS RADIO	- 1	- 3.81
N	122- 48	49 1/8	CONTROL DATA CORP	- 3 3/8	- 6.43
A	124- 91	103 7/8	DIGITAL EQUIPMENT	+ 5 7/8	+ 5.99
N	11- 7	8	ELECTRONIC ASSOC.	- 3/4	- 8.57
A	14- 8	9 1/8	ELECTRONIC ENGINEER.	- 1 1/8	- 10.98
N	39- 30	35	FOXBORO	- 2 3/4	- 7.28
O	42- 21	21 1/2	GENERAL AUTOMATION	- 4	- 15.69
N	77- 67	76	GENERAL ELECTRIC	+ 1 3/4	+ 2.36
N	45- 40	42 7/8	HEWLETT-PACKARD CO	- 2	- 4.46
N	152-121	123 3/4	HONEYWELL INC	- 3 3/4	- 2.94
N	387-315	331 1/2	IBM	+ 5	+ 1.53
N	171-127	130 3/4	NCR	---	----
N	34- 29	29 5/8	RCA	- 1 1/8	- 3.66
N	33- 26	27 1/4	RAYTHEON CO	- 1/2	- 1.80
O	8- 2	5 7/8	SCI. CONTROL CORP.	+ 3/8	+ 6.82
N	40- 33	33 5/8	SPERRY RAND	- 2 3/8	- 6.60
A	49- 33	36 1/4	SYSTEMS ENG. LABS	- 3/8	- 1.02
N	29- 20	20 1/8	VARIAN ASSOCIATES	- 2 5/8	- 11.54
A	51- 36	38	WANG LABS.	- 5 3/4	- 13.14
N	115- 83	96 1/2	XEROX CORP	- 1/2	- 0.57

LEASING COMPANIES

EXCH	1970 RANGE	CLOSING PRICE		WEEK NET CHANGE	WEEK PERCENT CHANGE
O	9- 6	7 3/8	BANISTER CONTIN	- 1 3/8	- 15.71
O	25- 20	23 1/4	BOOTHE COMPUTER	---	----
O	8- 6	6 7/8	BRESNAHAN COMP.	- 3/4	- 9.84
O	8- 6	6	COMPUTER EXCHANGE	---	----
O	18- 6	6 1/2	COMPUTER LEASING	---	----
O	15- 8	9	CYBER-TRONICS	- 1 1/2	- 14.29
N	32- 15	16 1/8	DATA PROC. F & G	- 3 7/8	- 19.38
O	8- 4	5 3/4	DATRONIC RENTAL	- 3/4	- 11.54
A	24- 18	20	DEARBORN COMPUTER	---	----
O	8- 6	8	DIEBOLD COMP. LEAS.	- 1/8	- 1.54
A	10- 6	6 1/4	DPA. INC.	---	----
A	22- 14	15 1/2	GRANITE MGT	- 1 7/8	- 10.79
A	14- 10	10 1/4	GREYHOUND COMPUTER	- 1 1/4	- 10.87
N	30- 15	15 3/4	LEASCO DATA PROC.	- 1 1/4	- 7.35
O	5- 4	4 7/8	LECTRO COMP LEAS	---	----
A	19- 6	6 5/8	LEVIN-TOWNSEND CMP	- 7/8	- 11.67
O	4- 2	2 3/8	MANAGEMENT ASSIST	- 1/8	- 5.00
O	8- 6	8	NCC LEASING	---	----
O	8- 5	5 1/8	SYSTEM CAPITAL	- 3/8	- 6.82
A	19- 13	17 1/2	U.S. LEASING	- 1/2	- 2.78

PERIPHERALS & SUBSYSTEMS

EXCH	1970 RANGE	CLOSING PRICE		WEEK NET CHANGE	WEEK PERCENT CHANGE
N	62- 40	41 3/4	ADDRESSOGRAPH-MULT	- 3 1/4	- 7.22
O	15- 5	6 1/2	ALPHANUMERIC	- 5/8	- 8.77
N	48- 31	31 3/4	AMPEX CORP	- 3 3/8	- 9.61
O	18- 9	10 1/2	APPLIED LOGIC	- 1/4	- 2.33
A	34- 8	11 3/8	ASTRODATA	- 1/4	- 2.15
O	11- 8	8 1/2	BOLT,BERANEK & NEW	- 1/4	- 2.86
N	14- 11	12 5/8	BUNKER-RAMO	- 3/8	- 2.88
A	33- 23	25 1/8	CALCOMP	- 1 3/8	- 5.19
O	13- 8	8 1/2	COGNITRONICS	- 1/2	- 5.56
O	12- 8	11	COLORADO INST.	- 1/2	- 4.35
O	36- 27	28 1/2	COMPUTER COMMUN.	- 4 1/2	- 13.64
A	12- 7	7 1/2	COMPUTER EQUIPMENT	---	----
A	28- 20	25 1/8	COMPUTEST	- 1 3/8	- 5.19
A	25- 14	15 1/8	DATA PRODUCTS CORP	- 3 1/4	- 17.69
O	23- 16	16 1/2	DATA TECHNOLOGY	- 2 3/4	- 14.29
O	13- 8	8 3/4	DIGITRONICS	---	----
N	40- 23	23 1/4	ELECTRONIC M & M	- 2 5/8	- 10.14
O	8- 5	5 1/4	FABRI-TEK	- 1/2	- 8.70
O	17- 5	6 5/8	FARRINGTON MFG	+ 1 5/8	+ 32.50
O	7- 4	5 3/4	GRAHAM MFG.	- 1/2	- 8.00
O	20- 14	16 1/2	INFORMATION DIS	---	----
A	67- 30	31 1/4	MARSHALL INDUSTRIES	- 4	- 11.35
A	84- 59	67 1/4	MILGO ELECTRONICS	- 5 1/8	- 7.08
N	87- 55	56 1/8	MOHAWK DATA SCI.	- 4 3/8	- 7.23
O	52- 24	32	OPTICAL SCANNING	---	----
O	17- 9	9 3/4	PHOTON	- 1	- 9.30
O	4- 2	2 7/8	PHOTO-MAGNETIC SYS.	- 1/8	- 4.17
A	42- 27	35 5/8	POTTER INSTRUMENT	- 4 1/4	- 10.66
O	25- 15	18 1/2	PRECISION INST.	- 1/2	- 2.63
O	83- 44	44	RECOGNITION EQUIP	- 4	- 8.33
O	34- 25	27 3/4	REDCOR CORP.	- 2 1/4	- 7.50
N	29- 14	14 3/4	SANDERS ASSOCIATES	- 1/4	- 1.67
O	53- 22	22	SCAN DATA	- 4	- 15.38
O	23- 17	18	TALLY CORP.	- 1	- 5.26
N	159- 90	124 7/8	TELEX	- 9	- 6.72
O	50- 27	35	VIATRON	+ 1/2	+ 1.45

SOFTWARE & EDP SERVICES

EXCH	1970 RANGE	CLOSING PRICE		WEEK NET CHANGE	WEEK PERCENT CHANGE
O	6- 4	4 1/4	ADVANCED COMP TECH	- 1/4	- 5.56
A	24- 7	8	APPLIED DATA RES.	+ 3/8	+ 4.92
O	8- 3	3 3/8	ARIES	- 1/8	- 3.57
A	47- 35	36 3/4	AUTOMATIC DATA PRC	- 4	- 9.82
O	14- 8	11	AUTO SCIENCES	+ 1/2	+ 4.76
O	9- 4	4 1/2	BRANDON APPL SYS	- 1	- 18.18
O	3- 1	1 3/4	COMPUTER AGE INDUS.	---	----
A	12- 3	5 1/2	COMPUTER APPL	- 2 3/8	- 30.16
O	14- 8	8 3/4	COMPUTER ENVIRON	- 1/2	- 5.41
NAT	10- 3	8 3/4	COMPUTER INDUS.	- 1 1/2	- 14.63
O	13- 5	7 1/2	COMPUTER NETWORK	- 1 1/2	- 16.67
O	15- 6	12	COMP. PROPERTY	- 1 3/4	- 12.73
N	34- 14	16	COMPUTER SCIENCES	- 5	- 23.81
O	8- 5	6 1/4	COMPUTER USAGE	- 3/4	- 10.71
A	75- 42	45 1/2	COMPUTING & SOFT	- 3 1/2	- 7.14
O	9- 5	5	COMRESS	- 2 1/4	- 31.03
O	14- 5	7 1/4	COMSHARE	---	----
O	3- 1	1 1/4	CONSOL. ANAL. CENT.	- 1/4	- 16.67
O	24- 14	15	DATA AUTOMATION	+ 1/2	+ 3.45
O	28- 18	19	DATA PACKAGING	- 3/4	- 3.80
O	6- 3	3 1/4	DATAMATION SERVICE	- 5/8	- 16.13
O	9- 5	8 1/2	DATATAB	- 1/2	- 5.56
O	4- 2	3 1/4	DIGITEK	- 5/8	- 16.13
O	13- 9	10 1/2	EDP RESOURCES	- 1/2	- 4.55
A	11- 8	8 1/2	ELECT COMP PROG	- 1/2	- 5.56
O	161-144	159	ELECTRONIC DATA SYS.	- 1	- 0.62
O	20- 10	10 1/4	INFORMATICS	- 3 1/2	- 25.45
A	25- 12	13 5/8	ITEL	- 1 3/8	- 9.17
O	7- 3	3	LEVIN-TOWNSEND SERV.	- 1	- 25.00
A	25- 18	19 3/8	MANAGEMENT DATA	- 1	- 4.91
O	8- 5	5	NAT COMP ANALYSTS	- 3/4	- 13.04
O	12- 3	12	NAT.COMP. SERV.	- 3/4	- 5.88
N	53- 25	29 3/4	PLANNING RESEARCH	- 3 1/8	- 9.51
O	27- 17	17	PROGRAMMING METHODS	- 1	- 5.56
O	5- 3	3 3/4	PROGRAMMING & SYS	---	----
O	33- 14	14	PROGRAMMING SCIENCES	- 1	- 6.67
N	14- 6	7 1/4	SCIENTIFIC RESOURCES	- 3/4	- 9.38
O	2- 1	1 3/4	SOFTWARE SYSTEMS	---	----
O	3- 2	2 1/4	STRATEGIC SYS	---	----
O	27- 15	15 1/2	TBS COMP CENT INC.	- 1 1/2	- 8.82
O	4- 2	4	UNITED DATA CENTER	- 1/8	- 3.03
N	99- 35	36 1/4	UNIVERSITY COMP.	+ 3/8	+ 1.05
A	20- 9	9 3/4	URS SYSTEMS	- 1/4	- 2.50
O	13- 7	9 1/4	U.S. TIME-SHARING	- 1	- 9.76

Nickels and Dimes

It's All in the Timing Department: The **BRASS RAIL RESTAURANT** in Manhattan has just announced that it is the newest Computicket site.

$ $ $

ALPEX COMPUTER CORP. and **PITNEY-BOWES** have formed a joint subsidiary to make and market point-of-sale systems. Pitney-Bowes-Alpex (PBA) will be composed of Alpex's Sales Point Information Computing Equipment (Spice) system, personnel, and manufacturing facilities, and $9.5 million of Pitney-Bowes cash. Norman Alpert, president of Alpex, will be president of PBA, while John O. Nicklis, chairman of Pitney-Bowes, will be chairman.

$ $ $

VERNITRON's 1969 sales rose to $43 million from $40 million in 1968, but net earnings dropped slightly from $3,978,135, or $1.04 a share to $121,330, or five cents a share. The difficulties lie in the company's trucking division, which incurred both losses and write-offs. The company said it intends to concentrate on its technological divisions, including one which makes data terminals.

$ $ $

COMPUTER PREPARATIONS, which designs and builds computer rooms, turned in earnings of $102,891, or 31 cents a share, on $1.2 million sales for the nine months ended Jan. 31. It said its backlog is more than $1 million as well.

$ $ $

DECISION DATA, suburban-Philadelphia equipment manufacturer, has found $1.4 million financing from private sources. The four-month-old company is headed by former Univac managers and specializes in peripherals, subsystems, and related auxiliary equipment.

$ $ $

Stock broker Dominick & Dominick has signed **COMPUTER AUDIT** to write a software control package for a $1.6 million teleprocessing system. The complete system, including all hardware components, will lease for about $70,000/mo, providing the lowest cost on-line and off-line transaction processing service available. According to the $50,000 contract, Computer Audit will adapt its Compak/360 software to Dominick's 360/50s.

$ $ $

Members of the **FINANCIAL ANALYSTS FEDERATION** and their colleagues specializing in computer peripherals will attend a special panel discussion at the New York Coliseum March 25. Sponsored by the Institute of Electrical and Electronics Engineers (IEEE), the session will present this panel:

William J. Osterman, panel chairman, director, product & market planning, Auerbach Corp., L. Richard Caveny, director, government marketing, Bryant Computer Products Div., Ex-Cello-Corp.; John McManus, NE regional manager, Mohawk Data Sciences; and William Sharpe, vice-president, marketing, Potter Instrument Co., Inc.

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